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THE GAS JOURNAL

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A Glance at the Contents—

Briquetting of Coal.

H. Hardy's process of briquetting of fine coal without the use of pitch is described.

Fuel Research Board Report.

"Tambt" comments on the conclusions in the report on the influence of the size of coal on carbonization in vertical retorts.

Distant Pressure Control.

We publish a report of the discussion on Mr. H. C. Widlake's paper on this subject before the Western Junior Gas Association.

Basic Price Legislation.

Mr. George Evetts reviews basic price legislation. He sets out in concise form all the principal clauses of the Acts relating to every basic price company in the country, and includes in his résumé the Bath and Dudley Orders.

Coal Gas and Meter Leathers.

An important investigation into the nature and properties of certain hydrocarbons in coal gas, and their effect on meter leathers, is described by Mr. R. S. Andrews, Chief Chemist to the Metropolitan Gas Company of Melbourne.

An Appreciation of John Foster.

Sir Arthur Duckham in our issue to-day refers in feeling terms to the late John Foster in an appreciation. We sorrow the loss of a friend, says Sir Arthur, and measure our loss by recounting those attributes which made him respected and beloved by all.

Gas at the Cookery and Food Exhibition.

Gas figures prominently at this Exhibition, which is now being held at Olympia. Chefs from many countries are jointly demonstrating their own skill and the magic of gas; in the lecture theatres, which are thronged daily, gas is the only cooking agent. The London Gas Exhibit Committee have a fine central stand and two other smaller stands.

Recent Developments in Gas Lighting.

At a meeting of the Illuminating Engineering Society last week Mr. E. L. Oughton, Distribution Superintendent of the South Suburban Gas Company, read a paper on "Recent Developments in Gas Lighting." A full report of the discussion is published in our columns to-day.

General Workshops Building at Rochester.

One of the foremost examples in modern factory construction has recently been completed and put into operation for the Service and Distribution Department of the Rochester, Chatham, and Gillingham Gas Company. An illustrated description of these workshops, the erection of which was carried out by Messrs. Gibbons Bros., Ltd., of London and Dudley, appears in this issue.

A New Gas Lamp Patent.

Among our patent specifications to-day is one by the South Metropolitan Gas Company and Mr. D. Chandler. This invention relates to improvements in incandescent gas lamps for use where a great intensity of illumination is required. There is provided a superheater for heating the mixture of primary air and gas in the form of an inverted cup, and means for directing secondary air into the cup, the secondary air being preheated thereby before it passes to the mantle. Preferably the mantles are located around the lower outer periphery of the cup, and the secondary air directing means directs the secondary air to a central zone of the cup, the air then sweeping outwardly along the base of the cup and down the side thereof. Further particulars and a diagram of this invention are given.

The "Gas Unit."

The "gas unit" was discussed at this month's meeting of the Central Executive Board of the National Gas Council, when it was reported that the Gas Charges Committee of the Council are of the opinion that, should a smaller unit be considered necessary, the unit adopted should be uniform throughout the country. Pending further consideration of the subject, the Committee has asked the Institution of Gas Engineers for their advice on the technical aspects of the question, and in the meantime has recommended to the Central Executive Board that a letter be sent to all members of the Council, informing them that the whole question is being carefully reviewed by the Council, and urging them meanwhile to refrain from adopting any unit other than the therm. The recommendation of the Gas Charges Committee was adopted, and it was also decided that the Institution of Gas Engineers should be invited to appoint representatives to consider the matter jointly with the Gas Charges Committee.

EDITORIAL NOTES

Basic Price Legislation.

OUR readers will be glad to find in this issue of the "JOURNAL" a review of basic price legislation by Mr. George Evetts, who sets out in concise form all the principal clauses of the Acts relating to every basic price company in the country, and includes in his résumé the Bath and Dudley Orders. The author, who gives a clear comparison of basic price and sliding-scale undertakings, also examines the application to Parliament of the Gas Light and Coke Company. The opinion is expressed that equal division of the "bonus" between the stockholder and workman is a fundamental requirement in the basic price system, but the relationship which that bonus bears to the consumers' share need not be a fixed one. The latter must be dependent on the choice of the pivotal or basic price, in relation to the basic dividend and the present selling price of gas, coupled with the potential dividend-earning capacity of the undertaking. From his analysis of the various ramifications of basic price it is clear that from what at first sight appears a simple system of division of savings on cost of supplying gas the system can become complicated and possess as many variations as the sliding-scale. Mr. Evetts also shows that it is a matter of considerable difficulty to reconcile the new system with the old, particularly in cases where the workman has already a right to share in the profits.

How the Gas Industry Can Help.

THE time of tribulation of the general body of investors, emphasized daily by the appearance of some new adverse influence, or some fresh unsatisfactory company report, would seem almost to have reached a climax in the early part of last week, when Sir Hugo Cunliffe-Owen, Bart., Chairman of the vast British American Tobacco Company, Ltd., towards the conclusion of his annual speech to the shareholders, warned them that in all probability a reduced final dividend for the current year is inevitable. The warning was accompanied by the explanation that the world in general is going through a period of distress unparalleled in the history of our time. This shock, at least, came somewhat as a surprise, in the light of the annual report of the Company and the interim dividend announcement, and the result was an enormous fall in the aggregate market valuation of the Company's shares. Even tobacco! No industry—no business even—can hope to emerge unscathed from such an ordeal as the world is now passing through; but as the existing period of distress is unparalleled in the history of our time, so it may be hoped that we shall not see it repeated.

Dangerous in any circumstances, the position in which the country finds itself has been rendered still more critical by the refusal hitherto of those in authority to recognize any necessity for pulling up in the mad career of extravagance in the unproductive pouring forth of money. There are now, it is true, signs that the actual state of affairs is beginning to make some impression in quarters whence control of the national purse emanates. But there is no need for us to wait for a lead from the Government before taking steps to improve the financial situation. Most people can do something, and the greater and the more widespread the effort the sooner shall we be out of the mess. And if individuals can help, industries can do still more. For example, gas undertakings in general could probably do themselves a good turn, and could certainly assist in the solving of the dire unemployment problem, by a policy of freer immediate expenditure upon extension work. The benefit to the country is obvious; there probably never was a time when such expenditure could do so much good. While as for the gain to the gas undertakings, it may be pointed out that costs are down, and practically all firms are in a position to offer quick delivery. We would urge upon Gas Administrators that expenditure upon remunerative extensions is the best way to improve the trade of the country in circumstances like the present.

In the battle of economists—some striving in one direction, and some in another, in the effort to suggest remedies for existing ills—we have no desire to take part. Our appeal to Gas Administrators may, however, suitably be concluded with reference to a broadcast talk last week by Mr. J. M. Keynes. A well-known economist of independent opinions, Mr. Keynes is reported on that occasion to have said: "Many believe the most useful thing they can do is to save more than usual. In the present circumstances that is utterly harmful and misguided. With a large unemployment surplus already available for producing capital goods, the effect of saving is merely to add to this surplus. Whenever you save 5s. you put a man out of work for a day." But the expenditure must be judiciously made, if it is to do the most good. Such outlay by gas undertakings as we have suggested would be of lasting value.

The Gas Unit.

IT was remarked by Mr. H. C. Smith, at the last meeting of the Southern Association of Gas Engineers and Managers, that the advisability of adopting a smaller Gas Unit, in order to facilitate comparisons with the Electrical Unit, was worthy of careful consideration, and he urged that the National Gas Council should have the matter in hand immediately. Mr. C. F. Botley replied that the Gas Charges Committee were already taking the question into consideration. This was welcome news, because it is a case in which the advantages of unity of action are at once apparent. It is also a case in which—as the discussion initiated in the Correspondence columns of the "JOURNAL" by Messrs. Radiation Limited, and in the "Gas Salesman" by Mr. R. D. Keillor showed—there are at any rate two schools of thought. Our pages have recorded the adoption by two municipal undertakings of Gas Units of different sizes—which is proof that the subject was full ripe for discussion, and therefore we and our readers are under a debt of gratitude to all those friends who took part in the ventilation of it through the medium of our pages. Among them, we would not forget to mention Mr. R. Bruce Anderson, Vice-Chairman of the Gas Companies' Protection Association, who drew attention to the problem of the unit at the annual meeting of that body.

The matter has now been carried a stage further, as will be seen from the report appearing in this issue of the proceedings at the January meeting of the Central Executive Board of the National Gas Council. The Gas Charges Committee, being of opinion that, should a smaller unit be considered necessary, the one adopted should be uniform throughout the country, decided to ask the Institution of Gas Engineers for their advice on the technical aspects of the question, and in the meantime recommended to the Central Executive Board that a letter be sent to all members of the Council informing them that the whole question was being carefully reviewed by the Council, and urging them meanwhile to refrain from adopting any unit other than the therm. The decision of the Central Executive Board that the Institution of Gas Engineers should be invited to appoint representatives to consider the matter jointly with the Gas Charges Committee, makes provision for thorough investigation of the Gas Unit in all its aspects, and it may be anticipated that, as requested by the Council, members will await their verdict before taking further action in the matter.

Coal Gas and Meter Leathers.

For more than two years the laboratory staff of the Metropolitan Gas Company, Melbourne, have been studying the nature and properties of certain hydrocarbons in coal gas and their effect on meter leathers; the investigation—which was undertaken because meter troubles had increased in proportion to the increased percentage of vertical retort gas—is still in progress, but we commence publishing to-day some of the conclusions reached. These conclusions, together with an account of the research, are set out by Mr. R. S. Andrews, Chief Chemist to the Company, in a paper to the Australian Gas Institute; and though the author makes it clear that the carbonization of high volatile Australian coal under Australian conditions in continuous vertical retorts presents problems which are purely local in character, his findings are bound to arouse much interest and speculation in this country. There can be no doubt, too, that those who advocate the horizontal system of carbonization will gain satisfaction from the author's observations.

Without going into any detail, we might to advantage call attention to a few of the main findings of a thoroughly practical piece of research carried out under particularly favourable conditions—we refer to the fact that the Metropolitan Gas Company possesses both horizontal and continuous vertical retorts, which rendered fairly simple a comparison between the light oil contents of the gas manufactured in each system. The light oils were recovered by scrubbing the gas with creosote oil or by passing it through activated carbon, and they were closely analyzed. Interpreting the results, Mr. Andrews states that gas from horizontal retorts is likely to be far less damaging to the meters than that from either continuous verticals or carburetted water gas plant. Its light oil content is less, and the unsaturated hydrocarbons contained in it are also lower. Carburetted water gas is the worst culprit, and vertical gas from English coal is less damaging than that from Maitland coal. The first stage in the inquiry " not only established the presence of styrene, cumarone, and indene in coal gas and carburetted water gas, but verified the presence of actual resins in the oil deposited in mains and meters."

The next step in the investigation was to examine a thousand meters which had been in service some years, in order to discover the exact effect of this light oil on the leathers; and the author gives his conception of what happens. Briefly, the leather dressing scrubs the light oil from the gas, and the light oil, in its turn, removes the dressing. With increased temperatures, the light oil is absorbed by the gas, leaving behind a resinous deposit which impregnates the diaphragm. If a small quantity of light oil is present, the resin is extremely gummy and adhesive, frequently causing the leather to adhere to the bottom of the meter, which tears on the expansion of the diaphragm. If, however, deposited light oil is absent and conditions are not conducive to its deposition, the resin deposit becomes brittle in nature, causing the leather to crack, and allowing the gas to pass unregistered. The thousand meters were chosen at random; and of those which needed new leathers before their term of years had expired, 64 p.ct. were from areas supplied with gas from continuous vertical retorts, and the remaining 36 p.ct. from districts being supplied with gas containing 50 p.ct. from continuous verticals. A survey of the Company's records from 1923 to 1927 pointed to the fact that " meter troubles have been accentuated by the presence of larger percentages of continuous vertical gas; " but the evidence which the author sets out in tabular form indicates that, before any proper appreciation of the real nature of the problem can be gained, close attention ought to be paid to the effect of the efficiency of the washing plant.

Mr. Andrews gives a vivid picture of the loss of gas caused by meter troubles. As a result of testing and examining hundreds of meters taken from the suburbs of Melbourne, he states that a " very conservative estimate of the unregistered gas passing through the consumers' meters is 3 p.ct. This figure does not include any unregistered gas due to taxing a meter beyond its capacity or through some of the mechanism being out of place due to indifferent handling." These are among the author's suggestions on how to prevent meter troubles: High efficiency of the washing and condensing plant; avoid low temperatures in the retorts and maintain a low oxygen content in the gas; employ semi-chrome tanned leather diaphragms and a dressing as perfect as possible (Mr. Andrews' remarks on this are of great interest); and select a suitable position for the consumers' meters.

From the foregoing notes our readers will have gained some idea of the scope and importance of the investigation; and it is a matter of considerable interest that future work will include observation of the composition of the light oil produced from silica settings compared with fireclay settings and from steamed and non-steamed vertical installations.

Lighting to the Fore.

The Gas Light and Coke Company have commenced a scheme which will bring the standard of gas lighting in the homes of prepayment consumers into line with the requirements of modern domestic lighting by supplying and fixing the latest design of shades, bowls, and the " positive " gas switch control on extended terms of payment. There is no doubt that the adoption of this scheme will prove helpful to the development of gas lighting. The Manchester Corporation Gas Department, in particular, and other towns are adopting similar methods with great success. These facts were mentioned by Mr. E. L. Oughton, Distribution Superintendent to the South Suburban Gas Company, at a meeting of the Illuminating Engineering Society last week. Extracts from his paper, together with a report of what undoubtedly was an encouraging discussion, will be found on later pages of the " Journal " to-day. We say an " encouraging discussion " because all too seldom does the Society devote an evening to consideration of gas lighting, which, considering the extent and development of modern illumination by gas, is a singular fact.

The last two years have witnessed commendable activity in the realm of gas lighting, and there are new installations of gas street lighting at the present day which are evoking the interest and admiration of lighting experts of both this and other countries. Our pages during the last few months have pictured some installations of street lighting by gas which are unsurpassed in efficiency from the point of view of the motorist, the pedestrian, and—not least important—the ratepayer. And our " Register of Patents " has afforded some indication of the improvements which have been effected in gas lamps and in lighting fittings, and has shown that the industry and the manufacturers are alive to the fact that gas is not to be ousted by electricity. In this issue, for example, we record a patent which has just been granted for a gas street lamp in which luminous output is enhanced by heating the secondary, as well as the primary, air for combustion. Then there has been the recent development in directive lighting by gas. Hence one can only regard as a form of facetiousness the remark of one speaker in the discussion to the effect that the gas lighting fittings demonstrated at the meeting no doubt gave very good results where electricity was not available. Another speaker's suggestion that " they had learnt more from Mr. Oughton in the last hour than during the last five years in connection with the possibilities of modern gas lighting " shows that something has been lacking in the gas industry's attitude towards the lighting load. Fortunately for both the industry and the public this attitude has undergone a transformation.

Among the recent developments, the gas switch certainly occupies a prominent place. The gas industry is in a position to offer its consumers a reliable switch. On this matter the remarks of Mr. Oughton are of much interest. Though at present gas switch controls all need a by-pass—and there is much to be said in favour of the small flame as a night light in the bedroom—the gas industry is looking forward to the fulfilment of promises made recently by certain makers to provide a reliable gas switch without a by-pass. " If this achievement is beyond the reach of private firms or individual inventors," said Mr. Oughton, " perhaps the Institution of

Gas Engineers could obtain financial assistance, or, as has been suggested, offer a substantial prize for a practical solution of this apparently elusive problem, which would create a widespread interest among the research scientists of the world. Once this objective is reached, there is no question that the use of gas lighting would be very greatly extended." In the meantime we have plenty of sharp weapons in our armoury; and we ought to use them to the best advantage.

Forthcoming Engagements.

Jan. 22.—BRITISH COMMERCIAL GAS ASSOCIATION.—Annual meeting of members in the South-Western district, at Exeter.

Jan. 23.—INSTITUTION OF GAS ENGINEERS.—Meeting of Board of Examiners (2.30 p.m.), 28, Grosvenor Gardens, S.W. 1.

Jan. 24.—MIDLAND JUNIOR GAS ASSOCIATION.—Visit to Works of Messrs. Edwin Danks & Co. (Oldbury), Ltd., Boiler Makers.

Jan. 24.—SCOTTISH JUNIOR GAS ASSOCIATION (WESTERN DISTRICT).—Visit to Messrs. Alder & Mackay, Ltd., Edinburgh.

Jan. 27.—SOUTHERN ASSOCIATION OF GAS ENGINEERS AND MANAGERS (EASTERN DISTRICT).—Meeting at 28, Grosvenor Gardens, S.W. 1, 2.30 p.m.

Jan. 27.—BRITISH COMMERCIAL GAS ASSOCIATION.—Annual meeting of members in the Southern district, 12.15 p.m., 28, Grosvenor Gardens, S.W. 1.

Jan. 28.—BRITISH COMMERCIAL GAS ASSOCIATION.—Annual Meeting of members in the Northern district, at Newcastle-upon-Tyne.

Jan. 29.—BRITISH COMMERCIAL GAS ASSOCIATION.—Annual meeting of members in Scotland, at Glasgow.

Jan. 30.—LONDON AND SOUTHERN DISTRICT JUNIOR GAS ASSOCIATION.—Paper by Mr. E. W. B. Dunning, B.Sc., "Incomplete Combustion; Its Importance, Recognition, and Prevention."

Feb. 5.—MIDLAND JUNIOR GAS ASSOCIATION.—Paper by H. S. Adams (Bilston), "Erection of a New Spiral Gasholder on an Old Site."

Feb. 6.—LONDON AND SOUTHERN DISTRICT JUNIOR GAS ASSOCIATION.—Annual Dinner and Concert, Holborn Restaurant, W.C. 1.

Feb. 27.—GAS COMPANIES' PROTECTION ASSOCIATION.—Meeting of Committee, at 5, Victoria Street, S.W. 1, at 2.30 p.m.

June 2-4.—INSTITUTION OF GAS ENGINEERS.—London Conference.

National Gas Council

A Meeting of the Central Executive Board was held at 28, Grosvenor Gardens, S.W., on Tuesday, Jan. 13—Sir DAVID MILNE-WATSON in the chair.

GAS LEGISLATION.

Further correspondence between the Chairman and the President of the Board of Trade was reported, with regard to the Committee to be set up to consider the recommendations contained in the Second Report of the National Fuel and Power Committee and to report what amendments to existing gas legislation were desirable and necessary to give effect to those recommendations by general legislation or by Special Order.

The President of the Board of Trade, in a letter to Sir David Milne-Watson, stated that he fully appreciated the desire of the industry to expedite this matter, and that he would do everything in his power to accelerate the work of the Committee.

SOUTH YORKSHIRE GAS NETWORK BILL, 1930.

The Bill promoted by certain Coke Ovens in South Yorkshire with the object of obtaining power to establish and operate the gas grid recommended by the Area Gas Supply Committee was considered, with a view to determining the attitude of the gas undertakings in the area concerned.

HIRE PURCHASE BILL, 1930.

The provisions of this Bill were considered, and a resolution from the Lancashire Commercial Section of the Manchester District Institution of Gas Engineers was reported, urging the Council to take action to have gas undertakings excluded from the operation of the Bill. It was agreed that, should the Bill obtain a Second Reading, which seemed doubtful in view of the congestion of Parliamentary business, the Council would take steps in conjunction with the Federation of British Industries with the object of having the Bill amended.

20-TON WAGONS.

It was reported that conferences had taken place between the Ministry of Transport and the railway companies, the Mining Association and the National Federation of Iron and Steel Manufacturers, and that consequent thereon the Officers of the Council had had interviews with representatives of the Ministry and of the Railway Companies' Association. A report was made as to the financial assistance which would be forthcoming to gas undertakers who would be prepared to adapt their terminals to the use of 20-ton wagons.

GAS UNIT.

It was reported that the Gas Charges Committee of the Council had considered the position which had arisen as the result of two Municipal Gas Undertakings adopting a unit of charge of smaller size than the therm. The Committee were of the opinion that, should a smaller unit be considered necessary, the unit adopted should be uniform throughout the country. Pending further consideration of the subject, the Committee had asked the Institution of Gas Engineers for their advice on the technical aspects of the question, and in the meantime recommended to the Central Executive Board that a letter be sent to all members of the Council, informing them that the whole question was being carefully reviewed by the Council, and urging them meanwhile to refrain from adopting any unit other than the therm. The recommendation of the Gas Charges Committee was adopted, and it was also decided that the Institution of Gas Engineers should be invited to appoint representatives to consider the matter jointly with the Gas Charges Committee.

SCIENCE MUSEUM—ADVISORY COUNCIL.

A letter was considered from the Board of Education, inviting the Council to nominate a representative to serve on the Advisory Council in connection with the administration of the Science Museum. The Central Executive Board agreed to appoint Mr. Thos. Hardie (Chief Engineer to the Gas Light and Coke Company) to represent them on the Advisory Council.

FARADAY CENTENARY.

In response to an appeal which had been circulated by the Federal Council for Chemistry, the Board agreed that the Council should subscribe 200 guineas to a Fund in connection with the Faraday Centenary Celebrations to be held in September of this year.

WORLD POWER CONFERENCE.

The Board authorized the payment of a subscription of £50 towards the expenses of the British National Committee, in respect of the current year.

FEDERATION OF BRITISH INDUSTRIES.

The Board approved the re-election of the following representatives to serve on the Grand Council:

Main Group 9, *Sub-Group* 1.—(*Chemical Fertilizers and Explosives*).

Mr. Chas. F. Botley.
Mr. Thos. Hardie.

Main Group 14, *Sub-Group* 3.—(*Public Utilities*).

Mr. F. J. Bradfield.
Sir Francis Goodenough.
Mr. L. E. Clift.

BRITISH INDUSTRIES FAIR.

Members of the Board were strongly advised to attend the Joint Gas Conference which is arranged to take place at the British Industries Fair, Castle Bromwich, Birmingham, on Tuesday, Wednesday, and Thursday, Feb. 24, 25, and 26. It was mentioned that Preliminary Programmes had been circulated, and that further copies could be obtained from the Secretary of the Joint Gas Conference, Mr. H. C. Smith.

PERSONAL

PRESENTATION TO MR. C. F. DUNLOP.

In connection with the Bowling Circle of the North British Association of Gas Managers, we learn of a very interesting function which took place during December.

The Bowling Circle intended to make a presentation to Mr. C. F. Dunlop, of 15, Gordon Street, Glasgow, at the Aberdeen Meeting in September. Unfortunately, Mr. Dunlop, through illness, was unable to be present. It was accordingly left to the Committee to visit Mr. Dunlop and make the presentation at a later date.

A Deputation, consisting of Mr. Harold Robinson, Mr. Tom Harper, and Mr. John Wilson, waited on Mr. and Mrs. Dunlop at their residence in Troon, and, in the name of the Bowling Circle, handed over to them a cut crystal liqueur service and a hand-painted coffee service. In doing so, the Deputation expressed the great appreciation that the Bowling Circle had, not only for the extremely valuable and useful work which Mr. Dunlop had done for it, but also of his own delightful personality and the way in which he had organized the meetings of the Circle from time to time.

The Deputation brought with them greetings from all the members, and expressed their sympathy with Mr. and Mrs. Dunlop during their very anxious time, and put forward the earnest hope that, ere long, Mr. Dunlop would be back among them fully restored in health.

Mr. Dunlop suitably replied, and expressed the hope that the time would not be long before he could again serve the Circle to the best of his ability, as he had always tried to do. He thanked the Circle for very thoughtfully including Mrs. Dunlop in their expression of appreciation.

At a meeting of the Grand Council of the Federation of British Gas Industries on Jan. 14, it was decided to recommend that Sir ARTHUR DUCKHAM, G.B.E., K.C.B., M.Inst.C.E., should be elected Deputy President for the ensuing year, with a view to his succeeding Sir James Lithgow as President in 1932.

Mr. J. B. HANSFORD, Engineer and Manager of the Bedford District Gas Company, has recently undergone an operation for appendicitis, but we are pleased to say he is making satisfactory progress.

OBITUARY

JOHN FOSTER.

An Appreciation by Sir Arthur Duckham.

At some other time there will appear an adequate account of the work accomplished by that fine Engineer, John Foster. To-day we sorrow for the loss of a friend, and measure our loss by recounting those attributes which made him respected and beloved by all.

He possessed practically every quality that is reckoned good in the make-up of a man. He was a gentle man, kind and considerate yet just and firm. Honest to the highest degree, yet not too hard on the faults of others. A leader of men, who won affection and true service from all under him. A single-minded servant to his employers.

A man full of ideas, insatiable for knowledge and quick in the uptake, with ready sympathy and help to those whom he considered honest in their endeavours.

A man of courage who backed his opinions and his work.

A good companion with a fund of humour; a kindly "leg-puller" with no drop of bitterness in him.

A fine sportsman who loved the open air, and forgot all worry on the links.

He has lived his life and no one has spoken ill of him. His life still lives for us, who during our days will find help and comfort from having known him.

THE FUNERAL.

The funeral took place on Wednesday afternoon at Erdington. A service at the United Methodist Church was conducted by the Rev. C. Ellison and the Rev. C. D. Barriball, of Bristol, who delivered an address.

Among those present were Alderman J. H. Lloyd (Chairman of the Birmingham Gas Committee), Alderman J. Gregory (Chairman of the Gas-Works Sub-Committee), Messrs. W. S. Body (representing the Town Clerk), A. W. Smith (General Manager and Secretary of the Gas Department), E. B. Tomlinson (Engineer-in-Chief), P. N. Langford (Engineer, Coventry Gas Department, representing the Midland Association of Gas Engineers and Managers), R. G. Shadbolt (formerly President of the Institution of Gas Engineers), T. H. Hack, G. C. Pearson, R. A. S. Browning, J. H. Darrah, G. A. Bamber, T. F. E. Rhead, Dr. C. M. Walter, Messrs. J. Hewett, R. J. Rogers, W. P. Timbrell,

R. L. Liney, R. A. Dry, R. G. Marsh, G. H. Wiggall, W. A. Twine, and R. A. Dry, senior.

The bearers, all employees of the Gas Department, were Messrs. V. Allbutt, W. H. Whiting, W. Voyce, J. W. Greenhill, T. Bowls, W. Westwood, and H. Ince.

Mr. JOHN WILLIAM WALTERS, General Foreman of the Plymouth and Stonehouse Gas Light and Coke Company's Works, has died at the age of 62 after almost a lifetime's service with the Company. He had been foreman for many years and was a very popular official.

THE NEWS OF THE WEEK

Complaints Have Been Made recently in Douglas regarding the streets lighted by electricity; and at a recent Council meeting it was stated that these streets were worse now than fifty years ago.

The Annual Dinner and Dance of the Midland Association of Gas Engineers and Managers will be held at the Grand Hotel, Birmingham, on Monday, Feb. 9. Tickets may be obtained from Mr. Arthur Roberts, Gas-Works, Hereford.

The Stockton Town Council have received sanction to borrow £25,000 in connection with the laying of new gas mains. It is proposed to supply gas to Sedgefield, Sadberge, Fishburn, and also to High Leven and Maltby. The total distance of the extensions sought is 19 miles, and the estimated cost of the mains and services is £31,302.

The Inverness Corporation Gas Department shows considerable progress and development during the past year. The increase in the demand for gas is such that a new waterless gasholder of half-a-million c.ft. capacity is now in the course of erection, and will be completed by June next. During next year, it is proposed to re-organize the plant for the treatment and working-up of crude tar.

In the Leeds Masonic Lodges, of the sixteen reigning Worshipful Masters four are at the present time connected with the gas industry, which, a correspondent remarks, must constitute something of a record: Goderich No. 1211, W.Bro. J. Rider (Messrs. Clayton, Son, & Co., Ltd.); Coronation No. 2922, W.Bro. Mathieson (Messrs. Wilsons & Mathiesons, Ltd.); Allerton No. 3047, W.Bro. J. A. Archdale (Messrs. Goodall, Clayton, & Co., Ltd.); St. Michaels No. 4353, W.Bro. H. Saville (Messrs. F. C. Sugden & Co., Ltd.).

A Bulk Supply of Gas from the Rotherham Gas Department has been applied for by Messrs. Steel, Peech, & Tozer, Ltd., for industrial purposes for an experimental period in connection with proposed extensions of furnaces at their works, and it has been recommended that the suggestion of the Gas Engineer to afford the suggested supply, the Company to contribute towards the cost of the main taken into their works, and also to pay 10 p.ct. on the cost of the meter required, be approved, and that the Gas Engineer be authorized to purchase a "Connersville" meter to measure the gas.

The Dewsbury Gas Department recently made a gift to the Municipal Technical College of the installation of an Arden Hill's "Acme New World" gas cooker, "Regulo"-controlled, for the use of the staff and students of the cookery centre. With a view to introducing the equipment Mr. H. Wright, Principal of the College, last week arranged for a series of demonstrations in cookery by gas, open to the public. There were large audiences. The demonstrator was Miss Hill, of Radiation Ltd., which firm also loaned a smaller cooker for demonstrations. During the demonstration Miss Hill lectured on the ease of handling these cookers, the reliability of control, and the lack of need for constant supervision of the cooking operations. The Dewsbury Gas Department, under the charge of Mr. H. L. Bateman, Engineer and Manager, are issuing these cookers at the rate of about 20 per week.

"Domestic" Service—1890-1931.

At the Nelson Showrooms this week a special window display is being made of a gas cooker which has completed forty years' service and is still so good, both in condition and in performance, that the hirer desires to buy it. Complete in every detail down to the brick deflector and meat hook, the exhibit has been placed on show exactly as received from the consumer, which fact indicates the extreme care taken of it. This must be one of the earliest model "Domestic" cookers made by Wilsons, and exemplifies the quality of that firm's products.

Demand for Non-Skid Roads.

Tar-Spraying the Safest Method.

Strong criticism of the slippery road surfaces which are met with in all parts of the country is made in the current issue of the "Builders' Merchants' Journal." An expert with more than 30 years' experience of road surfaces and treatments gives it as his considered opinion that local surveyors are largely to blame, and that it is due to their negligence that so many fatal accidents occur.

The writer agrees with the opinion expressed in the resolution recently forwarded to the Ministry of Transport by the Transport and General Workers' Union, that the only really safe surfaces are those provided on tar-sprayed roads. "The most dangerous roads," he states, "are those with oily surfaces which during wet weather become damp and clammy with a moist and treacherous film of deadly slime. Skids can only occur on greasy and ungritted roads.

"What our surveyors badly need is a little more practical road education, and the best way to educate them would be to compel every surveyor and assistant surveyor to ride ten miles twice daily through the city streets during the rush hours throughout the five bad-weather months of the year on smooth-tyred pedal cycles without brakes! Admittedly this would be 'feeding them up on their own grease,' but the heavy mortality rate would at all events soon provide the necessary vacancies for successors with ideas more in conformity with the real needs of modern road traffic conditions."

Newcastle's Street Lighting.

The Newcastle City Council have agreed to the Gas Company's application to abolish the pressure wave system of controlling the gas lighting in the city, and to substitute the clock system. Writing on this matter in a recent issue of the "North Mail," Mr. William Redfern gives some interesting figures relating to Newcastle's public lighting.

There are 9850 street lamps illuminated by gas, and 5589 illuminated by electricity. This gives a total of 15,439. The streets, front and back, that are lit measure 290 miles—that is, if they were put in one line they would extend from Newcastle to London and 22 miles beyond.

Every new housing scheme extends the work of the Lighting Department. For the St. Anthony's scheme, now under construction, the Department is budgeting for 190 additional street lamps.

"The vexed question of broken mantles, of which small flat-dwellers know something, has had all the vexation taken out of it by the Lighting Department, despite the fact that 20,000 mantles were used last year. Its record of service from each mantle is wonderful. There are hundreds of lamps that have only one mantle per year, and last year each nozzle carrying a mantle consumed only 2·8 mantles on an average.

"Every lamp is indexed and pigeon-holed, having a card history and description, and the whole of the city is divided into beats, each of which has a lighting attendant (not a lamp lighter, for the lighting is automatic) whose duty is to make an inspection each night of the lamps in his beat, putting any defects right, reporting upon them, and handing in his schedule to his inspector. The remarkable thoroughness of the oversight is indicated by the fact that on one night this week there were only two of the 9850 gas lamps not in use, and these were out because of service faults.

"Increasing automobile traffic has necessitated increased street lighting as a safety measure, and all the city bus routes are to have improved lighting this year. Mr. Davison, the Lighting Superintendent, who is a Past-President of the Association of Public Lighting Engineers, claims that in both the city and suburbs the standard of lighting in Newcastle is equal to that of any city in Great Britain, including London."

A REVIEW OF BASIC PRICE LEGISLATION

By GEORGE EVETTS,
M.Inst.C.E., M.Cons.E.

Now that basic price legislation has ceased to be a novelty, and there has been a considerable experience of its working, it is useful to take a review of the salient points concerning the undertakings with powers of this nature. The matter has again come to the front in view of the application of the Gas Light and Coke Company to Parliament during the coming session for "basic" powers.

The Board of Trade has, up to the present, not granted an Order under section 10 of the Gas Regulation Act embodying basic price provisions, but it is understood that the Board is prepared to do so, and there are, in fact, two such applications now being dealt with by the Board (Bath and Dudley).

Variations in Basic Price Provisions.

Although fundamentally as simple as the sliding-scale, there are many ramifications and variations in the application of a basic price and basic dividend, and the tables overleaf give a résumé of all the principal clauses in which variations can and do occur.

The Bath and Dudley Orders are included in the list to show what is being asked for, the figures being varied from the Draft Order where settlements have been made involving change.

It will be seen by the tables overleaf that there are fourteen basic price companies in the list, and two applications before the Board of Trade. Harrogate, however, is not a basic Company in the accepted sense of the term, because the "basic" price is only used as a standard for the calculation of the workmen's bonus, and therefore need not be further considered in these notes.

Single and Multiple Basic Price.

It will be observed that the basic prices fall under three headings, in respect to variations in selling price.

(1) Single basic, and single selling price—*e.g.*, South Metropolitan, Chester, Sheffield, Commercial.
(2) Single basic with variable (*i.e.*, differential) selling prices, *e.g.*, South Suburban, Wandsworth.
(3) Two or more basics corresponding to the differential powers—*e.g.*, Cardiff, Swansea, Windsor, Scarborough, Dover, Newcastle, Romford, Bath, Dudley.

It is possible, of course, that the second class may be ultimately merged into the first and that a fourth class may arise in which two or more basic prices may operate after the differential selling price has disappeared, and this vanishing differential may be due to either,

(*a*) being prescribed in Acts or Orders governing the selling price, or
(*b*) voluntary abolition in cases where the differentials are optional.

It is useful to examine the variations in effect between one basic and differential prices as compared with two basic prices.

It is clear that to have the same effect (at the present rates of sales) the single basic price must be the true average of the components.

Thus, if one district should carry a basic of 10d. and the second 11d., and the sale in the first area is treble the sale in the second, then the correct alternative single basic price is 10¼d. As long as there is no growth, or as long as the ratio of sales in the two areas keeps constant, it does not matter to the shareholders or consumers whether two basics are adopted or one is adopted, and surpluses can be allocated to one area or another without change in the consumers' share or the consequential dividend. In the case of growth, however, it is preferable to have the dual prices and higher basic price in the more rapidly developing area, because the consumers' share is then exactly represented between the basic and actual revenue.

If a simple basic price were adopted, followed by growth in the outer area, the required income to pay expenses would not produce so much for the consumers' portions as in the case of two basic prices. As an example, take—

Area (A)—Selling 180,000 therms at 10d. and 10d. basic price
" (B) " 60,000 " " 11d. and 11d. " "
The basic and actual revenue is (A) £7,500
(B) 2,750
£10,250 for 240,000 therms
the single average basic would be . 10¼d.

Now assume that sale in the inner area is doubled and in the outer area is quadrupled, and that the price of gas all round is reduced by ½d. per therm.

Under Two Basics.

Area (A)—Actual revenue . .	360,000 therms at 9½d.	£14,250
" (B) " " . . .	240,000 " " 10½d.	10,500
	600,000	£24,750
compared with basic revenue of		
Area (A)	360,000 therms at 10d.	£15,000
" (B)	240,000 " " 11d.	11,000
	600,000	£26,000
∴ consumers' share . . .		£1,250

Under One Basic, being the True Average in the Initial Stages.

Basic revenue	600,000 therms at 10¼d.	£25,625
∴ consumers' share only		£875
or two-thirds of the above figure of		£1,250
If the capital applicable to dividend were		£50,000

the shareholders' portion at ½ of the consumers' would amount to £208, or 8s. 4d. p.ct. in the first case and £146, or 5s. 10d. p.ct., in the second case.

Incidentally, under the old sliding-scale provisions, with 7 p.ct. capital and a 3s. 6d. slide, a halfpenny per therm reduction would make 8s. 9d. p.ct. increase of dividend, or 6s. 3d. in the case of a half-crown slide.

Comparisons with the Sliding-Scale.

There are not many differences of principle between the basic price and sliding-scale, particularly so when the sliding-scale is accompanied by a maximum dividend. The system is really an exchange of a percentage increase of dividend for a "pooled" increase. It has been stated that the public have never properly understood the sliding-scale, but it is probable that the basic system is equally incomprehensible.

The paradox of a larger divisible profit being coupled with lower selling prices still exists, and the public is not less likely to be confused with an imaginary standard revenue as with pivotal prices and dividends.

The three most important differences (apart from the administrative ones) are:

(*a*) The right of the workman to a prescribed portion of the economies is established.
(*b*) The saving of capital is more important under the basic price, seeing that lower capital expenditure operates in the shareholders' favour in two ways.
(*c*) The principle of average rental is established, and the nominal price no longer rules the dividend.

It may be pointed out that (*a*) may be obtained in the near future in an Act or Order without accepting the basic price principle, but the point is that these powers are not obtainable at present, or at least they are unprecedented.

With regard to (*b*) the incentive to save capital in the sliding-scale is single-fold—*i.e.*, the advantage to the shareholder is limited to the effect which low capital has on the price of gas.

The consumer pays for the majority of the waste, to the extent of 75 to 85 p.ct., exactly as he takes the major portion of the savings, but the shareholder gets 2s. 6d. p.ct. (usually) for each fifth of a penny reduction, independent of the amount of capital.

It can be shown that with the basic price the shareholder gets not only this amount, but an added amount due to the common pool being divided between a smaller amount of capital. This extra dividend is provided by a very slight increase in the price of gas, but this is unavoidable.

Name of Company	South Metropolitan.*	Cardiff.	Swansea.	Harrogate.
Date of Enabling Act	1920	1921	1921	1921
Basic price or prices	11d.	14·2d., 14·8d., 16·6d.	15·4d. and 16·0d.*	12·4d. (13·6d. M.)
Differential prices	..	0·6d. and 2·4d. optional	0·6d. optional	(*less* 10 p.ct.) —
Selling price, year of Act	10·5d.	13·6d.	18·0d.	11d.
Present selling price (Dec., 1930)	8·75d.	8·8d.	11·9d.	9·0d.
Surplus profits, definition	⅔ of consumer's share	Not defined	Not defined	None
Restriction on excess dividend above basic	..	No sum distributed unless price to ordinary consumers is below basic	No sum distributed unless price to ordinary consumers is below basic	..
Consumer's share, definition	Amount by which amount paid by consumer is less than it would have been at the basic price	Total sum by which consumers have benefited by way of a reduction in the price of gas below the basic	Total sum by which consumers have benefited by way of a reduction in the price of gas below the basic	None
Division among consumers	⅔ surplus profits	Their own share	Their own share	None
,, ,, shareholders	⅓ surplus profits=⅓ consumer's share	⅓ of above	⅓ of above	None
,, ,, employees	⅓ surplus profits=⅓ consumer's share	⅓ of above	⅓ of above	½ p.ct. on wages for ½d. below basic
Basic dividend(s)	5 p.ct.	5 p.ct. and 7 p.ct.†	5 p.ct. and 7 p.ct.†	10 p.ct. max.
0·2d. per therm in year of Act	£65,741	£6636	£2524	£1476 (approx.)
Shareholder's share per 0·2d.	£10,957	£1106	£421	None
Employee's share per 0·2d.	£10,957	£1106	£421	?
2s. 6d. on equivalent 5 p.ct. stock	£8,262	£627	£451	..
Details of employee's share	Carried to co-partnership fund. Divided as uniform percentage on salaries and wages	Carried to co-partnership, superannuation, and pension funds as Directors determine	Carried to co-partnership, superannuation, and pension funds as Directors determine	Carried to co-partnership fund. Divided as uniform percentage on salaries and wages
Reserve fund	Unlimited	Unlimited	Unlimited	10 p.ct. of capital
Use of above	Dividend equalization or any purpose	Dividend equalization or any purpose	Dividend equalization or any purpose	Dividend equalization or any extraordinary claim
Renewal fund per annum	..	..	..	..
Total	..	..	..	..
Special purposes fund per annum	1 p.ct.	1 p.ct.	1 p.ct.	1 p.ct.
Total	10 p.ct.	10 p.ct.	10 p.ct.	10 p.ct.

* Fixed by Board of Trade in pursuance of provisions of Act. † 7 p.ct. for capital raised after passing of Act.

Name of Company	Chester.	Sheffield.	Windsor.	Commercial.
Date of Enabling Act	1922	1922	1922	1927
Basic price or prices	10·4d., and 10·4d. + diff. charge	7d.	13·5d. and 14·5d.*	11d.
Differential prices	1·2d. optional	..	..	..
Selling price, year of Act	11·0d.	8·0d.	13·25d.	9·5d.
Present selling price (Dec., 1930)	8·0d.	6·6d.	11·0d.	9·0d.
Surplus profits, definition	Not defined	Not defined	Not defined	⅔ of consumer's share
Restriction on excess dividend above basic	No sum distributed unless price below basic	..	..	No sum distributed unless price to ordinary consumers is below 0·4d. above basic
Consumer's share, definition	Difference between money received, and what would have been received at basic price	Amount by which total sum paid by consumers is less than it would have been at the basic price	Amount by which sum paid by consumers is less than it would have been at the basic price	Amount by which amount payable by consumers is less than it would have been at the basic price
Division among consumers	Their own share	Their own share	Their own share	⅔ of surplus profits
,, ,, shareholders	To come out of ⅓ of above	⅓ of above	⅓ of above	⅓ of surplus profits=⅓ consumer's share
,, ,, employees	To have not less than shareholders of the ⅓ share	⅓ of above	⅓ of above	⅓ of surplus profits=⅓ consumer's share
Basic dividend(s)	5 p.ct. and 7·5 p ct.†	5 p.ct. and not more than 7 p.ct.†	10 p.ct. and 7 p.ct.	5 p.ct. and 6 p.ct.†
0·2d. per therm in year of Act	£1289	£16,654	£576	£16,527
Shareholder's share per 0·2d.	£215 at most	£2,776	£96	£2,754
Employee's share per 0·2d.	£430 less above	£2,776	£96	£2,754
2s. 6d. on equivalent 5 p.ct. stock	£196	£2,171	£115	£2,717
Details of employee's share	Carried to benefit or co-partnership fund	To superannuation or profit sharing by way of a percentage on wages	To co-partnership, superannuation, and pension funds	Uniform percentage on wages and salaries
Reserve fund	Unlimited	Unlimited	Unlimited	Unlimited
Use of above	Dividend equalization or any other purpose	Dividend equalization or any other purpose	Dividend equalization or any other purpose	Dividend equalization or any other purpose
Renewal fund per annum	..	..	..	..
Total	..	..	..	..
Special purposes fund per annum	1 p.ct.	1 p.ct.	1 p.ct.	1 p.ct.
Total	10 p.ct.	10 p.ct.	10 p.ct.	10 p.ct.

* Fixed by Board of Trade in pursuance of provisions of Act. † The higher rate applies to new capital.

With a fixed cost of production, increased dividend must come from an increased price, and it can be shown that reduction of capital would result in a slightly higher authorized dividend under the basic price system than it would under sliding-scale provisions.

In the basic price system, also, it pays to carry Loan Capital and Bank Loans to the limit in preference to raising ordinary capital.

Calculation of Basic Price and Dividend.

It is not always simple to transfer a standard price undertaking to the basic system because the following points must be observed:

(1) The present dividend must be maintained with prospects of increase at least as good as at present.
(2) The basic dividend should not be lower than the authorized dividend would be in cases of expensive coal, or in case of high price or acute depression in trade.
(3) In cases of existing profit sharing schemes, the workman's share should be maintained and be written back for the purpose of dividing a "surplus profit."
(4) In cases of a profit sharing scheme newly established under basic price provisions, the workman's share must be found, and it is usual to provide a small share for him as a starting off point.
(5) The relationship between basic dividend and workman's share must be equitable, otherwise the shareholder will get a deficient or an excess dividend in relationship to the worker.
(6) The increment should be balanced so that it is not radically different from the corresponding increment under the sliding-scale.
(7) The whole scheme should be so balanced that the advantages do not all appear on one side—*i.e.*, consumer, shareholder, or worker.

It is manifestly difficult in all cases to work up a scheme which will satisfy all these requirements.

With regard to (1) it is clear that there is no object in changing the system of price and dividend control to the prejudice of the shareholders. On the contrary, if the company making application has a good record, there is no reason why an immediate trifling increase in dividend should not be earned. The profits, of course, should be unimpaired.

Name of Company	Scarborough.	Dover.	South Suburban.	Newcastle.
Date of Enabling Act	1927	1928	1928	1929
Basic price or prices	9·2d. and 11·6d.	13d. and 15d.	11d.	7·4d., 9·6d., 8·5d., 10·6d., 8·9d.
Differential prices	2·4d. compulsory	..	½d. temporary	3·6d. optional
Selling price, year of Act	3s. 6d. per 1000	12·0d.	9·4d.	8·5d.
Present selling price (Dec., 1930)	9·0d.	10·0d.	9·0d.	8·0d.
Surplus profits, definition	Not defined	¼ of consumer's share	¼ of consumer's share	Not defined
Restriction on excess dividend above basic	No sum distributed unless price to ordinary consumers is below basic	No sum distributed unless price to ordinary consumers is below *12d.*	No sum distributed unless price to ordinary consumers is below basic	No sum distributed in excess of 5½ p.ct. unless price to ordinary consumers is below 8d.
Consumer's share, definition	Amount by which amount payable by consumers is less than it would have been at the basic price	Amount by which amount payable by consumers is less than it would have been at the basic price	As in S.M.G. Act	Amount by which amount (*less* discounts) payable by consumers (including present price) is less than it would have been at the basic price
Division among consumers	Their own share	¾ of surplus profits	¾ of surplus profits	As above
,, ,, shareholders	¼ of consumer's share	¼ of surplus profits = ¼ consumer's share	¼ of surplus profits = ¼ consumer's share	¼ of consumer's share
,, ,, employees	¼ of consumer's share	¼ of surplus profits = ¼ consumer's share	¼ of surplus profits = ¼ consumer's share	¼ of consumer's share
Basic dividend(s)	5 p.ct.	7½ p.ct.	5 p.ct.	5 p.ct.
0·2d. per therm in year of Act	£2245	£814	£15,800	£21,010
Shareholder's share per 0·2d.	£374	£136	£2,636	£3,501
Employee's share per 0·2d.	£374	£136	£2,636	£3,501
2s. 6d. on equivalent 5 p.ct. stock	£295	£197	£1,929	£3,430
Details of employee's share	To "any co-partnership scheme"	Uniform percentage on wages and salaries or else carried to co-partnership fund	Uniform percentage on wages and salaries and to superannuation fund	To pensions, widows, and sick funds, and balance as uniform percentage on wages and salaries
Reserve fund	Unlimited	Unlimited	Unlimited	Unlimited
Use of above	Dividend equalization or any other purpose	Dividend equalization or any other purpose	Dividend equalization or any other purpose	Dividend equalization or any other purpose
Renewal fund per annum	..	½ p.ct.	..	½ p.ct.
Total	..	5 p.ct.	..	10 p.ct.
Special purposes fund per annum	1 p.ct.	½ p.ct.	1 p.ct.	½ p.ct.
Total	10 p ct.	10 p.ct.	10 p.ct.	10 p.ct.

Name of Company	Romford.	Wandsworth.	Bath.*	Dudley.*
Date of Enabling Act	1929	1929	1930	1930
Basic price or prices	11d. and 11·6d.	11d.	5·5d. to 11·5d.†	9·6d., 11·1d., 12·3d.†
Differential prices	0·6d. optional	0·6d., 2·2d. compulsory	0·7d. to 6·75d. optional	1·5d. and 2·7d. optional
Selling price, year of Act	10·0d. and 10·6d.	7·6d.	5½d. in Bath	10d., 11·5d., and 12·7d.
Present selling price (Dec., 1930)	9·6d. and 10·2d.	7·6d.	5½d.	10d., 11·5d., and 12·7d.
Surplus profits, definition	Not defined	¼ of consumer's share	Not defined	Not defined
Restriction on excess dividend above basic	..	No sum distributed unless price to ordinary consumers below basic	..	..
Consumer's share, definition	Amount by which amount payable by consumers (including present price) is less than it would have been at the basic price	Amount by which amount payable by consumers is less than it would have been at the basic price	Amount by which amount payable by consumers is less than it would have been at the basic price	Amount by which amount payable by consumers is less than it would have been at the basic price
Division among consumers	As above	¾ of surplus profits	As above	As above
,, ,, shareholders	¼ of consumer's share	1/10 of surplus profits = ⅛ consumer's share	¼ of consumer's share	¼ of consumer's share
,, ,, employees	⅛ of consumer's share	1/10 of surplus profits = ⅛ consumer's share	⅛ of consumer's share	⅛ of consumer's share
Basic dividend(s)	5 p.ct.	5 p.ct.	5 p.ct.	5 p.ct.
0·2d. per therm in year of Act	£1628	£14,370	£5000 (Bath only)	£1625
Shareholder's share per 0·2d.	£271	£1,796	£833	£271
Employee's share per 0·2d.	£271	£1,796	£833	£271
2s. 6d. on equivalent 5 p.ct. stock	£106	£1,309	Was max. price company	Was a max. price company
Details of employee's share	As Directors may determine	Uniform percentage on salaries and wages	Earmarked for employees' benefit, of which co-partnership may form part	Transferred to any profit sharing scheme for the benefit of employees under agreement
Reserve fund	Unlimited	Unlimited	Unlimited	Unlimited
Use of above	Dividend equalization or any other purpose	Dividend equalization or any other purpose	Dividend equalization or any other purpose	Dividend equalization or any other purpose
Renewal fund per annum	1 p.ct.	..	½ p.ct. for first five years, then 1 p.ct.	½ p.ct.
Total	5 p.ct.	..	5 p.ct.	5 p.ct.
Special purposes fund per annum	1 p.ct.	1 p.ct.	½ p.ct.	1 p.ct.
Total	10 p.ct.	10 p.ct.	10 p.ct.	10 p.ct.

* Applications before the Board of Trade. † Revisable in 3 years or after.

With regard to (2) there would be no object in making a basic dividend of (say) 4 p.ct. with a company paying 10 p.ct. under the sliding-scale. Such a company (selling gas at (say) 8d. a therm) would have to sell gas at 17·6d. per therm before the sliding-scale dividend became reduced to 4 p.ct., and this increase from 8d. to 17·6d. would be equivalent to the maximum increase caused by the war even in small undertakings.

With regard to (3) assume for the moment an undertaking selling 4,800,000 therms per annum and having revenue for gas of £160,000 per annum. If a profit sharing scheme paying about £4000 per annum (0·2d. per therm) were in operation, this sum would be written back to the surplus profits to make a start for a basic price calculation.

Thus, if we wish to maintain the present position, then:

Workman's share	= £4,000	say, ¼ consumers' share
Shareholders' share	= 4,000	,, ¼ ,, ,,
∴ consumers' share	= 24,000	
Total surplus profits	£32,000	

The consumers' share represents 1½ d. per therm; therefore, in selling at 8d., the basic price should be 9·2d. to produce the present ratio exactly.

If the capital (ordinary) is £400,000 out of a total of £600,000, the profit may be as follows:

5½ p.ct. on	£200,000	= £11,000	= 0·55d. per therm
7 ,, ,,	400,000	= 28,000	= 1·40d. ,,
		£39,000	1·95d. ,,
Taking the ordinary dividend at		£28,000	1·40 ,,
The shareholders' surplus is		4,000	0·20 ,,
The basic dividend is		£24,000	1·20 ,,
or 6 p.ct. on £400,000.			
The revenue being		£160,000	8·00d. ,,
We require for dividend and interest		39,000	1·95 ,,
Working expenses		£121,000	6·05 ,,
Which includes for profit sharing		£4,000	0·20 ,,

This calculation shows that the basic dividend should be fixed at 6 p.ct. If it is desired to work on a basic dividend

of 5 p.c. and produce the same result, the matter becomes more difficult.

To reach 7 p.c. dividend as before, needs	£28,000	+ loan interest
Basic dividend at 5 p.c. on £400,000	20,000	,, ,,
Shareholders' portion	£8,000	
∴ workman's portion should be . . .	£8,000	

Thus it is seen that, without altering the total dividend of the shareholder, the workman's share is doubled, due to no effort on his part, and the price must be increased by $\frac{1}{5}$d. per therm to meet the additional bonus; and this is caused simply by reducing the basic dividend from 6 p.c. to 5 p.c. If a basic dividend of 5 p.c. is considered consistent in this case, then the balance can be maintained by adding £80,000 to the nominal capital, thus maintaining the basic dividend at the lump sum of £24,000—*i.e.*, 6 p.c. on £400,000, equal to 5 p.c. on £480,000.

Regarding Nos. (4) and (5), the same result could be achieved by retaining £20,000 as the basic dividend, and £8000 as the shareholders' portion, but making the workman's share only half that of the stockholder. This, however, is not recommended, seeing that it destroys one of the fundamentals of the scheme—*i.e.*, equal division of surplus profits between worker and stockholder.

If there is no profit sharing scheme in existence the working costs must be increased if one is to be created. Logically, no workman's share means no stockholder's share, and the correct starting-off point would be a basic price equal to the present average net rental, and a basic dividend equal to the present dividends, leaving the future to bring surplus profits for all concerned. It is felt, however, that the profit sharing fund should have a start, although this is not always easy.

Take an example of a company selling, as before, 4,800,000 therms at 8d. per therm net rental, and paying 10 p.ct. dividend on

£280,000 ordinary capital	= £28,000
Preference and loan £200,000 at 5½ p.ct. . . .	= 11,000
	£39,000

To pay £2000 a year to profit sharing, this money must be found, either by

(*a*) Increasing the price.
(*b*) Using a surplus.
(*c*) Reducing the expenditure.
(*d*) Refraining from a decrease where one is due.

However, this entails carrying £2000 to shareholders, and on a 6 to 1 ratio £12,000 to consumers, which is three-fifths of a penny per therm.

Consequently the basic price should be 8·6d. per therm. £2000 leaves the balance of £26,000 as basic dividend, equivalent to a basic dividend of 9·28 p.ct. This is not only an awkward figure, but it is high as a basic dividend, and rather knocks the bottom out of the argument that we commence with a reasonable return on capital and a fair day's pay for labour, with each sharing equally afterwards. This can be got over on paper by converting the capital to the equivalent of 5 p.ct. or 6 p.ct., but it does not eliminate the initial objection to conceding £26,000 as the reasonable or basic toll for an undertaking of this size without a lot of explanation. It is to be noticed that in this case no adjustment of the proportion between stockholder and consumer would meet the case, and in order to reduce the basic dividend to 5 p.ct. a basic price of 12·2d. would operate, but the worker's portion would be £14,000, or 0·7d. per therm, which might be as much as 20 p.ct. on the wages to begin with, and a crippling sum for the undertaking to find.

It will be observed from the tables that the statutory allocations to the workman's share vary not only in nominal amounts but in relation to the method of distribution. For instance, the South Metropolitan, Harrogate, Chester, Commercial, and Wandsworth allocations must be paid directly as a percentage on wages. These undertakings may have superannuation funds, sick benefit funds, and other similar charges against revenue for the workman's benefit, and therefore the profit sharing element as a whole may greatly exceed the allocation of such companies in which the workmen's share may be allocated to benefits other than a percentage addition in wages.

For instance, Romford has power to allocate the workmen's share to any scheme which the Directors may set up for the workmen's benefit; Newcastle, Chester, Scarborough, Dover, Bath, and Dudley are almost as free, whereas Cardiff, Swansea, Sheffield, and Windsor are definitely earmarked for either pensions or percentage bonus on wages.

The value of the workers' total bonus can be widely different, depending on whether these benefit funds are included in or additional to the statutory workers' share.

With regard to No. (6), it is not always easy to satisfy this requirement, and it is not of major importance.

Taking the example just quoted, 10 p.ct. dividend may be accompanied by either a 2s. 6d., 3s. 6d., or 5s. slide, and in an undertaking selling 4,800,000 therms, one-fifth of a penny a therm represents £4000 per annum to the consumers, and if the sliding-scale stock is £280,000 we get the following:

On a 2s. 6d. slide	£350 a year
,, 3s. 6d. ,, ...	£420 ,,
,, 5s. ,, ...	£700 ,,

These can be equated more or less by the following proportions under the basic division.

⅛ of the consumers' share	= £667 for ⅛d. per therm
⅛ ,, ,, ,,	= £500 ,, ,,
1/10 ,, ,, ,,	= £400 ,, ,,
1/12 ,, ,, ,,	= £333 ,, ,,

It may be assumed, therefore, that this adjustment is the easiest to make; and providing the remaining conditions are satisfied, reasonable variations in the increment value would be allowed. The lower the capital, the greater becomes the "consumers' benefit" in a sliding-scale company, but it must not be overlooked that the increment cuts both ways—*i.e.*, the effect can be in either direction in a sliding-scale. In the basic price, however, it acts in one direction only, and it will be observed that the Wandsworth Company adopted the ratio of 1 to 8, which was practically the same ratio as in sliding-scale conditions. When we consider changes from maximum price to basic, however, such consideration need not be taken into account, and we have a clean start, and it is usually desirable in such cases to keep to the "common form"—*i.e.*, a ratio of 1 to 6.

The consideration of the scheme as a whole is dealt with in No. (7), which is really a summary of the position before and after the adoption of the system. It is not expected that all the advantages of the change are to be enjoyed by the shareholders, but in the case of maximum price undertakings where the maximum dividend is secured with a large margin between maximum price and selling price, it is not unreasonale to look for an immediate small benefit to the shareholders, whose maximum dividend is virtually a secured charge. In such a case it cannot be claimed that the security of the basic dividend has any improved tangible value, and even in sliding-scale companies there are precedents for the minimum dividend.

The Gas Light and Coke Company's Bill.

In view of the foregoing remarks it is interesting to examine the application to Parliament of the Gas Light and Coke Company, if only for the reason of the low stockholders' portion, the ratio of which is defined in the Bill as 1 to 12—*i.e.*, one-sixth part to be divided equally, which is really one-half of the amounts allocated in the South Metropolitan and other Companies, between stockholders and workmen.

The promoters have had difficulty in forming an equitable Bill, having regard to the legitimate claims of the three parties concerned—consumers, stockholders, and workmen—particularly as the workmen are already in enjoyment of the advantages of a considerable bonus in the shape of contribution to the existing co-partnership and pension funds. The difficulties mentioned are inherent in any application of a sliding-scale undertaking with a co-partnership scheme, and the following considerations must be kept in mind with any company so situated.

(*a*) The stabilization of the 11d. basic price in London.
(*b*) The stabilization of the basic dividend of 5 p.ct.
(*c*) The maintenance of the existing dividend (which is £5 12s.).
(*d*) Keeping the equality between workmen's and stockholders' bonus, and
(*e*) Maintaining the present contribution to co-partnership and pensions.

The writer considers that the equal division of the "bonus" between the stockholder and workman is a fundamental requirement in the basic price system, but the relationship which that bonus bears to the consumers' share need not be a fixed one. The latter must be dependent on the choice of the pivotal or basic price, in relation to the basic dividend and the present selling price of gas, coupled with the potential dividend earning capacity of the undertaking.

An examination of the figures in the Gas Light and Coke Company case will show that it is a well-balanced application having regard to the requirements of the case and

the position of other London undertakings which have adopted this system.

The gas sold is in round figures at present	240,000,000	therms
The basic revenue at 11d. would be . .	£11,000,000	per annum
The net gas rental at 8·2d. per therm (when selling at the nominal price of 8 6d. per therm) is	£8,200,000	,,
Therefore the consumers' share is . . .	£2,800,000	,,
and the share of the shareholders' and workmen's bonuses	£470,000	,,
i.e., Stockholders' and workmen's bonus is each	£235,000	,,

The workmen's share can (according to the Bill) be transferred to the co-partnership fund, the pension fund, or similar benefit funds, and the sum of £235,000 is approximately equal to the sums so charged at present.

The existing dividend can be maintained with a margin, but that margin is less than the corresponding figure of the South Metropolitan Company. It must not be overlooked, however, that competition to some extent dictates the price, and it is not always possible to sell at a price and make a profit equal to the corresponding authorized dividend. It would not be good business policy to pay the full authorized dividend unless the money is "in the till" at the end of the year. If such a course was desirable, and the net revenue insufficient, then the balance must come from the reserve fund.

The increment of dividend under the present sliding-scale system in the Gas Light Company is 2s. 8d. p.ct. for each fifth of a penny per therm on a capital of about £18,700,000 —(say) £25,000 per annum. The equivalent increment under the basic price system proposed is one-twelfth part of £200,000, or (say) £17,000, or two-thirds of the present figure. Therefore, in getting a higher "authorized" dividend the shareholders are taking a less proportion of the savings of the future.

In view of the figures indicated in this short examination of the position, the Gas Light Company should have very little difficulty in getting this Bill through Parliament.

Position of Existing Basic Price Companies.

An examination of the table in the early portion of this review shows the varying proportions which have been adopted as the shareholders' and workmen's share of the surplus profits, and the relationship between the equivalent of the increment of 0·2d. under sliding-scale and basic price provisions.

As before mentioned, the stockholders' and workmen's shares are in all cases equal, but with varying ratios of $\frac{1}{4}$, $\frac{1}{8}$, and $\frac{1}{10}$ part of the consumers' bonus. The value of the increment to the shareholders is sometimes more and sometimes less than the corresponding value under sliding-scale provisions.

Summarizing.

From this analysis of the various ramifications of basic price it is clear that from what at first sight appears a simple system of division of savings on cost of supplying gas, the system can become complicated, and possess as many variations as the sliding-scale. It is also shown that it is a matter of considerable difficulty to reconcile the new system with the old, particularly in cases where the workman already has a right to share in the profits.

Gas at the Cookery and Food Exhibition

Gas figures prominently at this Exhibition, which is now being held at Olympia. Chefs from many countries are jointly demonstrating their own skill and the magic of gas; in the lecture theatres, which are thronged daily, gas is the only cooking agent.

The London Gas Exhibit Committee, which represents the Gas Light and Coke Company, the South Metropolitan Gas Company, the South Suburban Gas Company, the Commercial Gas Company, the Tottenham and District Gas Company, the Croydon Gas Company, and the Wandsworth, Wimbledon, and Epsom District Gas Company, has a fine central stand, together with two other smaller stands. The main exhibit, which is most artistically lighted round the outside by modern gas lanterns of "old-world" design, distance controlled, is of the semi-open style, enabling visitors to gain at a glance a favourable impression of the cleanliness, comfort, and artistic merit of gas lighting, heating, water heating, and cooking—the different gas appliances being shown in operation. The display reflects great credit on the Committee, the Hon. Secretary of which is Mr. J. E. Henwood, who, as is well-known, has done much for the cause of both gas and the exhibition generally.

A comprehensive range of up-to-date gas appliances is to be seen on the stand. Among these are a "Wonder Washer;" a gas-heated clothes airing cupboard fitted with a temperature controller; a "Vivo" water heater for bathroom purposes; the "Segar" grill, which is operated by two parallel burners provided with gas fire radiants, by means of which both sides of steaks, chops, fish, &c., can be cooked at the same time; the "Metropole" toaster and griller; a Jackson Boiler Company's dual café installation with coffee-making section and milk container, the apparatus being fitted with a special by-pass and tap arrangement whereby the gas is turned on full as soon as water is drawn off; a "Langham" central range, with four ovens, all externally heated, the burners being fitted with gas and air regulators and pilot lights. A two-deck pastry oven is an attractive exhibit. The ovens are lined with mottled grey enamel, with fire tiles at the bottom, externally heated by one burner chamber under the lower compartment. The doors are of the fall-down type, lagged, lined internally with aluminium, and fitted with piston type buffer hinges. Oven thermometers are provided.

As for water heating apparatus, an "Ideal" gas boiler is in operation, occupying little space and fitted with an efficient insulating jacket, conserving heat and giving a neat appearance. These boilers ensure complete combustion of the gas, and automatic control is provided to avoid overheating and consequent waste; a thermostatic pilot keeps the gas supply valve closed should the pilot be extinguished. The "Equator" circulating boiler is also to be seen, the full gas consumption of which is 50 c.ft., with an automatic reduction to less than 2 c.ft. per hour when the water is hot and not required. The action of the boiler is completely automatic. A number of gas fires in artistic surrounds provide cheerful warmth for the stand. One of these fires, with a stainless steel surround, is particularly attractive. A gas-operated refrigerator is also in evidence.

A New Instantaneous Heater.

A "Metro" multi-point geyser is also exhibited in white enamel finish. This has a very pleasing appearance, and operates simply by the turning on of the bathroom tap, the closing of the tap automatically shutting off the gas except for the pilot jet. The "Rayrad" radiator is also in operation. The lighting fittings are very attractive, both bowl and panel fittings being in evidence, while Sugg's six-burner ventilating lamps add to the brightness of the stand.

On the second stand of the London Gas Exhibit Committee are a number of gas fires in attractive surrounds, together with domestic coke fires with gas igniting attachments. The "Pyromax" portable gas heater is to be seen, together with the latest development in screen heaters, the "bayonet" flexible tube attachment being utilized in these cases for the gas supply.

On the first floor of the Exhibition building is a further stand on which are exhibited two of the most modern gas fish-frying installations. These are the "Metro" range and the "Teuton" range. The former is equipped with a regulator to be used with varying calorific values of gas. On this floor also is a demonstration stand exhibiting speci-

A section of the London Gas Exhibit Committee's main stand, showing some of the larger restaurant apparatus exhibited. In the centre is the " Langham " central range, with four ovens. In the far left-hand corner is a small fish-frying range, while next to it is a steaming apparatus in which a number of different foodstuffs can be steamed simultaneously. The " Segar " grill is on the extreme right. An idea of the excellent lighting of the stand can be obtained from this photograph.

mens of cakes made by the Women's Advisory Staff of the Gas Light and Coke Company.

Development of a Well-Known System.

Messrs. Thomas Potterton (Heating Engineers), Ltd., of Cavendish Works, Balham, S.W. 12, have an interesting stand particularly directed to culinary work, a general display of gas-heated automatic hot water supply apparatus to meet the requirements of hotels, restaurants, and residential flats being shown. A working example of a Potterton installation with " Victor " automatic thermal storage apparatus supplying hot water for culinary work forms one of the interesting features of the exhibit, the apparatus on show being a completely enclosed enamelled set operating, in addition to the sink supply, a circulating towel rail as an example for residential work. This apparatus is fitted with patent adjustable thermostat and luminous burner equipment giving the utmost flexibility in action, and maintaining the water hot with a consumption of 1·7 c.ft. of gas per hour.

In addition to the foregoing hot water service plant, Messrs. Potterton have a working example of central heating by means of circulating radiators operated from a " Victor " boiler, controlled by rod thermostat. An example of an insulated storage set of the cylindrical type is also demonstrated, having a positive " snap-action " thermostat which is similar in every respect to the installations adopted in the Empire Hall of Olympia, recently built. These sets, having insulated and enamelled steel jackets and " snap-action " thermostats, are intended for use where a secondary circulation is not required; hence the radiation losses are reduced to a minimum and enable the gas to be cut off for long periods when the demand is small, only lighting up after the drawing of hot water. The new " Empire " boiler is also exhibited, having insulated and enamelled exterior with bimetal adjustable thermostat and luminous burner.

On the coke side is an example of combined apparatus for " indirect " hot water supply, comprising an " Ideal Classic " coke boiler working directly for the radiators, and indirectly through a specially constructed indirect cylinder (or calorifier) for hot water service, having as an adjunct a gas boiler with luminous burner for summer duty in hot water supply alone, when the capacity of the coke fire is out of proportion to the requirements.

Other Exhibits.

A large number of other exhibiting firms show a wide range of gas cooking apparatus of every design, among these being the Carron Company, who are exhibiting gas ranges and grills, gas-heated hot closets and carving tables, &c. Jackson Boilers, Ltd., are demonstrating some of their well-known restaurant appliance, while Messrs. Easiwork, Ltd., are showing their low-pressure cookers in attractive coloured finishes. These cookers are equipped with pilot jets operated by the pressing of a button, a new type thermometer at the side of the oven, self-locking valves, and other innovations. A useful heat-proof drawer is provided beneath the hotplate, while there is a hot closet below the oven. Many firms are showing fish-frying ranges, and the British Trawlers' Federation, Ltd., are organizing a National Fish-Frying Competition, in which over 500 fish-fryers from all parts of the British Isles are taking part.

Among other exhibitors of gas cooking apparatus are Messrs. Hodgkison & Co., Schwarz's Sons, Benham & Sons, Ltd., Mabbott & Co., Ltd., and James Stott & Co., Ltd.

The foregoing are just a few of the firms who are demonstrating what gas can do in the restaurant and in the home, and no useful purpose could be served by detailing further the extensive range of gas apparatus to be seen. Altogether at this Exhibition, in addition to the London Gas Exhibit stand, a total of some 32 firms are actually burning gas on their stands, while many others are showing apparatus not connected up.

This Exhibition continues to be of great value to the gas industry in telling the public what our most experienced caterers and our foremost chefs have already discovered—that gas is the only fuel for large and small scale cooking, offering a clean heat, unfailing in supply, and readily adaptable to sudden and varying demands.

New General Workshops Building at Rochester

One of the foremost examples in Modern Factory Construction has recently been completed and put into operation for the Service and Distribution Department of the Rochester, Chatham, and Gillingham Gas Company.

The building occupies a commanding site on the gas-works approach in Gas House Road, Rochester, and is fitted up with a complete set of organized workshops specially designed for efficiently handling the whole of the service and maintenance work associated with the Gas Company's interests.

The general layout of the building is planned with a main rectangular floor area of 16,500 sq. ft., divided into the following rooms and workshops: General stores, meter testing room, fitters' shop, carpenters' shop, tinsmiths' shop, blacksmiths' shop, stove shop, power room, general office, mess room, &c.

INTERNAL VIEW OF GENERAL STORES SHOWING RACKS FOR TUBE FITTINGS, &c.

The work in connection with the scheme was successfully undertaken during a period of ten months, and included the construction of heavy pile foundations and the erection of the structural steelwork and main building brickwork, together with the fitting-up of the interior and the provision of cooker cleaning plant, heating apparatus, lighting and water services, drainage system, and petrol bulk storage equipment, &c.

During the preliminary survey of the site, trial boring operations were carried out to determine the subsoil conditions below the existing ground level, and from the various results obtained it was decided to construct the main foundations in heavy reinforced concrete piling work.

As the work proceeded considerable difficulty was experienced from varying strata layers in the clay formation, and as a consequence of extreme marshy conditions several

VIEW OF GENERAL OFFICE SHOWING SPECIAL CEILING AND LANTERN LIGHT.

VIEW OF GENERAL STORES.

of the piles penetrated a maximum depth of 44 ft. 6 in. before a consolidated bottom was reached. Altogether a total of 106 piles averaging from 35 ft. 6 in. to 50 ft. in length were successfully driven during a period of four winter months.

Upon completion of the foundation work, each pile was carefully levelled off and prepared with a heavy tapered head to receive the reinforcement of the main platform floor. The main floor extends over the full area of the building, and is formed with a solid reinforced concrete floor surface approximately 4 ft. 6 in. above ground level. Special provision is made in the design of the floor for the reception of electric generating plant, power utensils, machinery, and working equipment.

The main building comprises a steel-framed and brick-built structure 150 ft. long by 110 ft. 6 in. deep consisting of two permanent brickwork gable elevations, two permanent brickwork side elevations, five spans of northern light roof bays, continuous roof glazing, asbestos roof tiling and boarding, together with steel roller shutters, steel entrance and emergency exit doors, ventilating system, rain water drainage, &c.

The external elevations are carried out in first-class Kentish stock brickwork and finished with vertical piers and longitudinal string courses to encase completely the skeleton steel framework.

The special north light roof is particularly arranged to provide the maximum natural lighting for the internal floor area, and is constructed with five 30-ft. bays of continuous roof glazing, roof boarding, felting, and tiling extending the full depth of the building.

Each roof bay is fitted with a series of air suction ventilators operated by disc valves continually to circulate a stream of air throughout any section of the building. The main roadway elevation is designed with two main entrance doors and two large warehouse openings to facilitate the loading and unloading of goods by road transport. Each warehouse opening is fitted with the latest type steel roller shutter 12 ft. wide by 10 ft. high, operated by quick-action chain opening gear. Access to the entrances is afforded by an extended roadway and reinforced concrete loading dock from Gas House Road. At the rear and sides of the building a roadway embankment is formed, together with steel doors for emergency fire exit.

SIDE VIEW OF STOVE SHOP.

The most outstanding feature of the completed building is the internal fitting work, which is of interest to everyone concerned in modern labour-saving practice and production efficiency applied to the development of distribution and service business. The whole of the interior walls forming the workshops and rooms are substantially built in reinforced brickwork and treated with enamelled plaster or distemper finish to suit the requirements of the Factory

Acts and working conditions of the separate departments. The floor areas are finished with special cement paving to withstand the heaviest wear from trolley wheels, moving plant, and machinery.

Each divisional section is fitted with moulded entrance doors, window lights, and ventilator mesh framing, together with the necessary apparatus for dealing with the various work concerned. Special steel sliding doors and quick-service counter hatches are incorporated in the design of the general stores, to facilitate the handling of large gas stoves and cooking utensils.

The working equipment is practically all driven by power machinery, and the atmosphere of the entire building is characteristic of up-to-date supervision and efficiency. The heating installation is carried out on the low-pressure hot water gravity system, and consists of a high-level continuous circulating main operated from a central coke fired self-contained boiler. During the winter months the temperature of the interior is constantly maintained at 53° Fahr. and the absence of varying temperatures affords ideal conditions of working throughout the various seasons of the year.

The petrol bulk storage equipment serving the transport department is situated immediately outside the main entrance, and consists of a curb-side recording pump with underground storage tank inspection pit and accessories.

The cooker cleaning installation is accommodated in an adjacent connecting building 36 ft. long by 13 ft. wide, and includes a self-contained gas-fired furnace oven 9 ft. 6 in. long by 5 ft. wide by 8 ft. 6 in. high, complete with steel chimney, bracings, charging and discharging doors, loading trucks, track rails, and steel chequered operating floor. The plant has been specially designed for rapidly burning off paint, oil, and grease from gas cooking apparatus, and efficiently operates at a working temperature of 900° Fahr.

Particular attention has been paid to the interior decorative scheme, and the aluminous finish to the whole of the structural steelwork affords a pleasing contrast from every aspect of the building.

The whole of the work has been detailed to the design of Mr. C. Valon Bennett, Engineer and General Manager of the Company, and forms a creditable acquisition to the Service and Distribution Departments.

The contract was executed by Messrs. Gibbons Bros., Ltd., Constructional Engineers, of London and Dudley.

IN CONTINENTAL COUNTRIES - - -

Abstract Translations from the Technical Press of France and Germany.

BRIQUETTING OF COAL WITHOUT USE OF PITCH.

H. Hardy's process of briquetting is described in "Chimie et Industrie," 1930, 24, 1499-1501 (Dec.), by C. Mathy, the Belgian correspondent of that journal.

The process is applicable to fine coal. As regards coking coals, when these are heated to the point of pasty fusion the particles of coal are converted into more or less spherical globules consisting of a mixture of the coal and pitchy matter exuded from the coal. Three methods may be employed for the manufacture of briquettes from coal treated in this way. (A) The product may be briquetted while hot in a special form of press after leaving the heater. (B) The product may be allowed to cool below 212° Fahr., after which it is treated with water in a pulverizing machine, reheated to about 212° Fahr., kneaded, and briquetted in an ordinary press. (C) The product may be allowed to cool completely, after which it is moistened, kneaded, and briquetted in an ordinary press without being reheated. The process enables the use of pitch to be eliminated, or, when briquettes are carbonized at a low temperature, economized, since, in the latter case, when ordinary briquetting with pitch is practised, one-half of the pitch used is lost.

The plant required is as follows:

(1) An oven containing an iron, cast-iron, or steel trough in which a system of rakes turns the coal over and promotes uniform heating. Over-heating at the discharge end is avoided by heating the trough in a lead bath. Water vapour is removed at the feed end and vapours of tar and gas are removed by an exhauster at the discharge end.
(2) A cooling chamber which is a prolongation of the trough and is also provided with rakes. This cooling chamber is not required if the product is to be briquetted hot, in which case the press must be gas-tight in view of the large amount of gas evolved from the coal.
(3) Pulverizers with a controllable supply of water. These are required when briquetting of the hot product is not carried out (cases B and C, above).
(4) A kneader which converts the coal to a sufficiently fine, more or less dry, paste (cases B and C, above).
(5) A combined heater and kneader (required for case B, above).
(6) A helical conveyor which conveys the coal to
(7) A briquetting press.
(8) A conveyor to remove the briquettes and allow them to cool.

There are other advantages in the process, apart from economy of pitch, if the briquettes are to be submitted to low-temperature carbonization. Briquetting may be completed within 5 minutes after the coal leaves the heater, and the briquettes may be fed directly to the low-temperature carbonization plant. Carbonization occurs very rapidly and requires, at a maximum, 30 minutes. The whole process of converting the coal into semi-coke occupies about one hour. If the cooling method involving kneading in the wet is employed, the heating and cooling operation requires about 45 minutes, and the kneading and briquetting about 10 minutes. Carbonization then requires approximately 40 minutes, and the whole operation requires about 1½ hours. The third variation, involving reheating after moistening, adds roughly 20 minutes to the operation, and the total time is thus increased to approximately 2 hours. On the other hand, when briquettes made by conventional methods with use of pitch are carbonized, heating must be very slow and must be the slower the more highly caking is the coal. Hence the carbonization stage requires 4-7 hours. The process described thus reduces the time required for the conversion of coal into semi-coke to one-half or even to one-quarter when the hot briquettes are carbonized immediately they are made. The plant required is very compact, since the coal does not remain in any of the component parts more than three-quarters of an hour. Moreover, all the equipment is standard, suitable for large throughputs, and capable of easy control.

Of the three methods outlined, the first one necessitates completely continuous operation, but the other two, which may be intermittent, yield superior products, and, in the case of method (B), a particularly homogeneous, regular, and hard semi-coke is obtained.

Low-volatile coals and anthracite are not, by themselves, amenable to this treatment, but must be mixed with caking coals in the ratio of 30 : 70 or less.

A further possibility in connection with the application of the phenomena attending the effect of heat on coal is the recovery of coal from the slurry of coal washing plant or from other fine shaley matter. Such material may have an ash content of 60-70 p.ct., but may contain 8 p.ct. of coking coal having an ash content not exceeding 8 p.ct. When the material is heated, the globular coal particles which are formed will float on water and may thus be separated from the shale particles, or separation may be accomplished by the use of an appropriate series of screens on which the coal particles will rest while the shale particles will pass through. A progressive concentration of the coal may thereby be achieved.

The recovered shaley matter may be used for the manufacture of bricks or cement. It yields gas when heated, and the gas may be employed in heating the furnaces, economy in fuel thereby resulting. The shaley matter recovered in this way generally consists of a very pure clay, and can replace clay for many purposes.

THE "JOURNAL" TECHNICAL RECORD

Which also contains Full Reports of Meetings of Gas and Allied Associations ———

Recent Developments in Gas Lighting

By E. L. Oughton, M.Inst.Gas E., Distribution Superintendent to the South Suburban Gas Company.

[From a Paper before the Illuminating Engineering Society]

It is well to bear in mind that since the introduction of gas for lighting, which occurred over one hundred years ago, the B.Th.U. dissipated per candle-hour have been reduced from about 200 B.Th.U. in the flat-flame burner to 10 B.Th.U. in the modern high-pressure gas lamp, or a 2000 p.ct. gain in the effective utilization of heat units per candle-hour.

This indicates real progress in the history of gas lighting, but, of course, if viewed from the standpoint of the loss of heat units in the production of light, the ratio of light obtained compared with the heat dissipated is, in common with all artificial light sources, still very small.

There is a point with gas lighting which is often overlooked or misconstrued, because the heat generated in producing the light is not all wasted, for in its utilization it may be used to associate in useful service the sister sciences of illumination and heating and ventilation in efficiently lighting, in particular, the interiors of large public buildings, churches, halls, &c., by definitely assisting the ventilation, and also minimizing down-draughts where the plenum system of heating is not used. This fact ought to be borne in mind by the independent consulting illuminating engineer when advising and preparing schemes, in appropriate circumstances.

There is a general tendency at the present time to persuade users of light to adopt very much higher standards of illumination for all purposes, yet I think there is a point when adequate light is given and beyond which it becomes a luxury and is not available to the many on economic grounds.

Prof. Darling, in his first Cantor Lecture, delivered at the Royal Society of Arts, on Nov. 24, 1930, stressed the importance of the scientific construction of the incandescent gas burner and particularly emphasized the super importance of the gas nipple or ejector having the small orifices correctly proportioned and microscopically perfect in their internal contour if a perfect flame is to be obtained under general working conditions.

The "Metro" gas burner, with fixed gas and air nipple, is constructed so as to meet these very stringent requirements. It is so designed that, with the exception of a burner socket which is brazed to the pendant, the burner can be removed without having to unscrew any part, as the burner fits into the socket by means of a bayonet joint, so that with just a turn it can be removed for cleaning as easily as an electric bulb. The globe is supported by means of lugs which fit into grooves in the burner rim and so obviate the use of any screws. There are no gas or air regulating screws, the air ports and ejectors being set for a given pressure and calorific value.

These burners reduce maintenance cost to a minimum. The duty of these with a straight coal-gas of 560 C.V. and a burner pressure of 25 tenths W.G. is as follows:

Burner. Co.'s No.	C.Ft. per Hour.	M.L. H.C.P.	C.P. per C.Ft.	Lumens per C.Ft.	Type of Mantles.
1	1·25	25	20	125	Bijou (No. 1)
2	2·5	50	20	125	Medium (No. 2)
3	3·75	75	20	125	Universal (No. 3)
5	3·75	110	29	184	3, No. 1 (superheater)

Domestic Lighting.

An essential point in modern domestic gas lighting is switch-control, which has seen many changes in principle and practice during the last 20 years.

Though for the present gas switch controls all need a by-pass—and there is much to be said in favour of the small flame as a night light in the bedroom—the gas industry is, however, looking forward to the fulfilling of promises made recently by certain makers to provide a reliable gas switch without a by-pass. If this achievement is beyond the reach of private firms or individual inventors, perhaps the Institution of Gas Engineers could obtain financial assistance, or, as has been suggested, offer a substantial prize for a practical solution of this apparently elusive problem, which would create a widespread interest among the research scientists of the world.

Once this objective is reached, there is no question that the use of gas lighting would be very greatly extended, and, with the increased use of smokeless fuel for domestic heating the bogey of dirty ceilings would be diminished, as there would then be a marked diminution of the solid impurities, soot, grit, &c., in the air which is directed to the ceiling by the heated convection currents.

The "Positive" Gas Switch.

A new form of switch is of the "positive" type, having a lever and slide action. It is operated by means of a 21 gauge nickel silver wire having a tensile strength of 100 lbs. enclosed in a continuous coil of suitable heat-treated spring wire treated with graphite powder to obviate friction. This is then covered with a lead sheath so as to facilitate fixing to walls or embedding in plaster, running the cable round corners, and guarding against damp.

The standard lengths of cable are from 6 ft. to 24 ft., though longer lengths up to 100 ft. are available. The plug of the gas cock is specially constructed and fitted to give a free-and-easy movement without allowing gas to percolate through the plug fitment at a pressure of 12 in. W.G. If ordinary care is exercised in fitting, this switch is really reliable and positive in action. An interesting feature of the by-pass flame is that the maximum consumption at 30/10ths pressure W.G. is only 0·28 c.ft. per hour.

The Gas Light and Coke Company have commenced a commendable scheme which will bring the standard of gas slot-lighting installations into line with the modern requirements of domestic lighting by supplying and fixing the latest design of shades, bowls, and the "positive" gas switch control on extended terms of payment, in conjunction with the maintenance scheme already in operation. There is no doubt that the adoption of this scheme will prove helpful to the development of gas lighting.

The Manchester Corporation Gas Department, in particular, and other towns are adopting similar methods with great success, as the use of a gas switch removes all disabilities as to controlling the light in the room from a convenient point.

Churches and Public Halls.

Modern gas lighting for these types of buildings may be divided into three sections:

(*a*) Ventilating lamps of high power, fixed to ceiling or ornamental ducts, directly connected to extractor ventilating cowls.

(*b*) Large cluster units fixed under, but distinct from, the ventilators, and which may be fitted with raising and lowering gear for cleaning purposes.

(*c*) Separate superheated cluster units of varying size, according to the particular design of pendant and architectural details of the building.

Whether large or small lighting units are used, they are now—almost without exception—fitted with distant control, which enables the installation to be controlled either singly or in any sequence.

The degree of illumination in churches is often a matter

of sentiment, but in public halls a minimum of 6 foot-candles is advisable.

These buildings are definitely favourable for gas lighting, for, in addition to lending itself to scientific illumination, as mentioned in the introduction, the adoption of gas lighting does materially assist in creating creature comfort by diminishing, and in many cases entirely eliminating, down-draughts when the installation is correctly designed. For this reason it is advantageous to adopt large gas-lighting units for the main body of the church or hall, even if electric light is retained for under the galleries, &c., thus increasing the factors of comfort and reliability.

Mr. Robert Watson, Gas Engineer at Doncaster, relates an interesting case in point at the Corn Exchange Buildings, Doncaster (see "JOURNAL" for March 26, 1930), where six pendants fitted with 20-light clusters, giving approximately 6000 candle-power, were installed and successfully eliminated down-draughts previously existing.

Many public and church halls cater for indoor sports, such as badminton, &c., and modern gas burners in suitably planned batteries or units will give every satisfaction. While the particular method of applying the light may vary, two factors are constant—*i.e.*, high illumination and absence of glare, or interference to the players' eyes within reasonable limits.

SCHOOL LIGHTING.

As school lighting is being considered by a Committee of which the writer is a member, it is not proposed to go into any details at present, beyond saying very definitely that up-to-date gas lighting can meet every requirement for the satisfactory lighting of schools.

SHOP LIGHTING.

Large Stores.—As some of the large multiple stores with open counters displaying goods always install the dual system in case of light failure, it seems opportune that the gas industry should avail themselves of the modern trend in design of fitting, and adapt them for gas lighting and so make the emergency lighting part of the general scheme probably on a fifty-fifty basis, and avoid having to use lamps which, though efficient, yet mar the architectural scheme of lighting.

Also, the modern lighted ceiling panels are quite within the range of gas lighting with its positive control of the lights from the switchboard.

Outside Window and Parade Lighting.—There are indications of a definite movement towards the increased use of outside lighting to attract the public to view the goods on show. It is also an asset to the shopping centres to have brilliant lighting as a permanent feature in addition to the street lighting.

The three general methods adopted are as follows:

(*a*) High or low pressure gas lamps fixed in front of the windows at a height and distance from the ground and window respectively so as to give adequate illumination on the goods displayed. Suitably designed reflectors may be fixed according to circumstances.

(*b*) Lamps of higher candle-power than (*a*) on front of building above the fascia.

(*c*) Lamps fixed on columns near edge of causeway (usually 12 in. to 18 in. away) forming a system of parade lighting which may supplement the lamps on the shop fronts.

Modern practice is to control all lamps, whether high or low pressure, in groups or singly. Low-pressure lamps may have the clockwork time controller fitted to cut out hand control altogether. The use of lightly frosted globes for the 1000 candle-power and upwards high-pressure gas lamps improves the diffusion and gives quite a pleasing effect.

The relative duty of the high and low pressure superheated lamps respectively on the M.L.H.C.P. rating and the B.Th.U. basis per candle-hour is approximately:

High pressure:
10 B.Th.U.; 300 lumens per c.ft.

Low pressure:
16–18 B.Th.U.; 190 lumens per c.ft.

A new design of low-pressure gas lamp, for shop fascia and hoarding lighting is the "strip" lantern, which is rectangular in shape and has up to sixteen mantles in a row and is fitted with an adjustable reflector.

FACTORY LIGHTING.

It is generally accepted that the deplorable lighting conditions found in many factories are primarily due to the apathy of those controlling same, owing to the absence of definite regulations compelling improved lighting, and not to any particular system of lighting.

High-pressure gas installations are ideal for modern factories, and with its wide range of units—60 to 500 candle-power and upwards—conditions requiring varying degrees of local or general lighting can be satisfactorily and scientifically provided for with the higher standard of illumination now demanded if output is to be increased, quality of work improved, and accidents avoided.

Low-pressure gas lighting has also developed its usefulness by the adoption of modern-design reflectors in enamelled iron which meet the B.E.S.A. reflector specifications.

STREET LIGHTING.

The general development in street lighting is to bring the standard of lighting in line with the B.E.S.A. specification, and the latest improvements may be said to be the utilization of ancillary means to increase the effective and directive power of the potential light available at the source. This does not, however, warrant the focussing of a ray on the "test point" to the detriment of the mean average illumination.

It is common knowledge that while the B.E.S.A. specification is based upon the minimum illumination at a given "test point," the U.S.A. and Continental authorities specify the average value of the total flux of light on the street.

The more recent methods adopted for increasing the duty of street lamps are as follows:

Prismatic heat-resisting glass refractors of various designs.
Silvered-glass mirrors.
Stainless-steel reflectors.
Chromium-plated steel reflectors.
Enamelled iron and aluminium reflectors of varying designs.

Some of the reflectors used with the "Metro" cradle lamps are as follows:

(*a*) Enamelled-iron reflector with stainless-steel curtain; one-sixth of curtain is of opal glass, and a ruby reflex box is fitted at base of cradle, directly underneath the lamp.

(*b*) Shallow enamelled-iron reflectors, with curtain of ruby or clear glass acidized on inside.

(*c*) Dome-shaped enamelled-iron reflector, with a 4-in. curtain.

(*d*) Rustless-steel angular reflecting curtain, 7½ in. deep, fitted on house side of lamp with plain mirror glass pyramids at base of cradle directly underneath the lamp.

These reflectors are made with varying diameters and depth to meet the particular duty for which they are designed.

PRISMATIC-GLASS REFRACTORS.

These recently designed prismatic refracting plates, as designed for gas lanterns, are now familiar to public lighting engineers. Among others, Mr. Robert Watson has recorded good results. The directional control of the beam at 15° below the horizontal gives an increase over the bare mantles at the same angle from 180 candle-power to 645 candle-power on the polar curve, without sacrificing the light at the other angle in accomplishing this.

Dog and Dirt Track Racing.—Low-pressure gas has been successfully applied to these modern sports by the Brighton and Hove Gas Company. An illumination of 10 foot-candles is given on the "hare" and on the track a maximum of 11·9 foot-candles and a minimum of 7·3 foot-candles. Similar conditions were provided on the dirt track running parallel.*

FUTURE DEVELOPMENTS.

If there is to be a regaining of the diminished gas lighting load and the retaining of that we have, it is necessary that the gas undertakings inaugurate through the "B.C.G.A." a scheme for educating the public in the general principles of good lighting with the modern application of gas for this purpose.

This could be done by making surveys of various classes of industries, large stores, and public buildings where gas can be used to advantage and by issuing technical data in readable form so that consultant and user may be convinced that gas is a modern lighting agent.

Mr. Oughton's address was illustrated by a series of lantern slides showing typical examples of modern gas lighting for domestic, trade, and industrial purposes, together with diagrams of luminosity curves and drawings of various types of public lighting lanterns.

* "GAS JOURNAL," Oct. 24, 1928.

Other interesting exhibits were also on view, including a plate refractor in the form of symmetrical and asymmetrical circular glass refracting bands, designed to fit inside the bowls of medium-sized gas lamps (referred to by the author in his paper). A series of gas lights, arranged by the Gas Light and Coke Company's Watson House section, indicated the trend of gas lighting developments from the earliest times of the flat-flame and Argand burner to the most up-to-date examples of decorative lighting fittings. The positive distance control gas switch was also demonstrated, together with a number of drawings, diagrams, and photographs of gas lighting installations.

Among those present were Sir Francis Goodenough, C.B.E., Mr. W. M. Mason and Mr. J. C. Walker, of the British Commercial Gas Association, Mr. A. Tennant, Sales Manager of the East Surrey Gas Company, Mr. R. N. LeFevre, of Watson House, who demonstrated the range of lighting fittings, and a number of other gas engineers and officials.

Discussion.

Mr. W. M. Mason was the first speaker, and he commented on the excellent demonstration of modern gas lighting they had had. Some pessimists, said Mr. Mason, wanted them to think that gas was a back number for lighting purposes; but he was certain that what they had seen and heard that night would convince any fair-minded man that there was a great deal to be done by gas in satisfying the modern needs for lighting. From the gas point of view and from the point of view of the British Commercial Gas Association it was an admirable demonstration of the capabilities of gas lighting at the present day.

Commander Haydn Harrison also congratulated the author on putting up the best case he could for gas lighting. Speaking as an electrical engineer, he considered it a splendid case, because it reminded him of his own business. He thought it would be admitted, however, that the electricians had led the way from the point of view of artistic effect. He referred to the fact that the gas industry still adhered to the mean lower hemispherical candle-power rating, and said that on account of this it was difficult to make a proper comparison between gas and electricity. The author had given them the total output in lumens. He thought that in the case of gas mantles—especially the smaller sizes—the output in the lower hemisphere was greater than in the upper hemisphere. He would suggest that the figure would be nearer 15 or 16 lumens per c.ft. Another point with which he would like Mr. Oughton to deal was in connection with by-passes. It was not stated whether the by-pass gas was included in the measurements. What was the average consumption, he asked, over the twenty-four hours? It was operating for 8000 hours per annum. He remarked that he had had great difficulty in obtaining information in regard to by-passes. He was glad to notice that a large section of Mr. Oughton's paper was devoted to the lighting of churches. This, as a rule, was not wholly a commercial subject. It was obvious that more beautiful results had been obtained in churches, and the assisted ventilation given by gas was a very great advantage. Many churches did require their ventilation to be assisted considerably. In regard to the gas industry having started to focus their light on a test point, he suggested that if this was done they would not come within the B.E.S.A. specification. They would find that by utilizing directive systems the illumination of the test point was brought up; by means of Holophane panes the evenness of the illumination was greatly increased.

A Gas Lighting Service Bureau.

Dr. J. W. T. Walsh said that he felt they had learnt more from Mr. Oughton in the last hour than during the last five years in connection with the possibilities of modern gas lighting. It was gratifying to know of the tremendous capabilities of gas lighting at the present time. The author had visualized greater education of the public in regard to the general principles of good lighting by gas. If there could be more education of the public and technical men as regards the possibilities of gas, it would do a great deal towards the cause of lighting in general. There need not be any cut-throat competition, said Dr. Walsh; it was a question of utilizing the most suitable means in order to obtain the results desired. One could not do that intelligently unless one had all the information before one. One could obtain all the information one required in regard to electric light, said Dr. Walsh, simply by applying to Savoy Hill, but it was very difficult to obtain information as to the possibilities of gas lighting. He wondered whether the British Commercial Gas Association could be persuaded to set up a lighting service bureau to show what gas lighting really could do. This would be a great step forward in illuminating engineering. He also said that he felt a certain sense of discomfort in dealing with the mean lower hemispherical candle-power. If they could persuade the gas industry to follow the same lines as the electrical industry in this matter, it would be much better.

Mr. A. Cunningham urged the need for more propaganda. Architects did not know of the effects that could be obtained by gas lighting fittings, and thought that all their architectural effects would have to go by the board if gas lighting was adopted. He cited a case in illustration of this point. In regard to the matter of by-passes, brought up by Commander Harrison, it was important whether the by-pass was for use in domestic service, where the proportion of lighting hours was small in comparison with the total hours of the year. In industrial situations, and where high candle-power lamps were utilized and the consumption of gas was high, the by-pass question was entirely a minor one. But he thought that Commander Harrison was right in suggesting that it was a serious item in domestic situations. This was all the more reason why they should look forward to the switch which would do away with the by-pass.

Coloured Lighting.

Dr. S. English said that the glassware used with gas lighting was in the habit of breaking, and that breakage was due to broken mantles. He would like to have the assurance that the gas industry was doing something to prevent mantles breaking so easily. He was going to suggest that gas was better than electricity in connection with coloured lighting. Those who had experimented with electric light knew that they could only obtain coloured lighting by filtering out from the light the colours they did not want. They knew that it was possible to obtain coloured bunsen flames by adding certain constituents to the gas. He suggested that it might be possible to incorporate in the mantles something which would give a preponderance of a certain coloured light required; thus they would be putting something into the light instead of taking it out by means of coloured glass when they wanted a definite coloured light.

Mr. J. S. Dow (Hon. Secretary of the Illuminating Engineering Society) said that the fittings shown indicated considerable enterprise on the part of the gas industry. He remembered various occasions when he was urging them to do this; and one of the points brought to him was to this effect: If they concealed their light in this manner, people would not know whether it was gas or electricity. Now this was a point, he felt, which must be waived if gas lighting was going to do all that it could do or might do. The electrical industry no longer brandished gasfilled filaments before their eyes. Mr. Oughton had shown how much could be done by gas lighting for everyone, and still more could be done. One might have artificial daylight with gas, and there was no reason why flood lighting could not be adopted. He did not lose sight of the great work the British Commercial Gas Association were doing, which, however, was limited by the amount of support they received; but he felt that a great deal of the work was confined to showing what gas would do in a commercial way. The industry must do this in order to live, but more beneficial propaganda would educate the public without showing so much that it was gas. The gas industry, he suggested, might have lectures throughout the country to show what gas would do in the way of lighting without a commercial aim. Referring to Mr. Oughton's statement that the directional control of the beam at 15° below the horizontal gave an increase over the bare mantles at the same angle from 180 c.p. to 645 c.p. on the polar curve, without sacrificing the light at the other angle in accomplishing this, Mr. Dow asked which other angle Mr. Oughton meant. One could not increase the light in one direction without taking it away from somewhere else.

Mr. L. T. Minchin, speaking in connection with the breakage of mantles, said that it was a question of testing. He knew of a case where a clockwork controller was utilized for testing mantles, and this turned the gas on and off at frequent intervals. As to the test point illumination for street lighting, the darkest point was not the B.E.S.A. test point. The darkest point was just beyond the lamp-post, on account of the fact that the light had a large angle of incidence, and the reflection was irregular. It was quite possible that the point between the lamps was the brightest part of the road.

Realiability of the Switch.

Mr. G. Campbell remarked that so much of the development of gas lighting seemed to be wrapped up in the switch. None of the switches in his experience had been reliable. Could they have some information in regard to these switches, for without the successfully controlled switch a great deal of this work would be useless. He also referred to the possibilities of gas for colour lighting purposes.

Mr. A. W. Beuttell said it was very gratifying to observe that the gas industry was producing these beautiful and perfectly suitable fittings. Some of the speakers seemed to have felt that they must not say too much about gas. The Illuminating Engineering Society had no prejudices, and they were all delighted to welcome a gas paper; they thirsted for information on the technical side, so that any time someone on the gas side could put up a technical paper, he considered that it would receive even more sympathy than an electrical one, if only for the reason that they had so few gas papers.

Mr. C. E. Greenslade said that good illumination could be appreciated, and the public were willing to pay for it. The fittings shown were extremely good copies of electrical fittings, and where electricity was not available no doubt gave very good results. All these things were possible years ago, but the explanation given by the gas industry was that the public would not be willing to pay for these types of fittings. In fact, it was suggested that fittings, burners, and all should be sold for 10½d. Now, however, it was evident that the public were willing to pay for the fittings, and this must be put to the credit of the Illuminating Engineering Society, which included both the gas and electrical sides.

Mr. J. C. Walker (Secretary to the B.C.G.A.) said that they must not overlook the steady work that the gas industry had been doing in regard to the maintenance of the consumers' lighting fittings. Ever since he had been connected with the gas industry—some twenty-seven years—gas undertakings had

been taking steps to see that the light the consumers were paying for was good light. Progress had certainly been made in connection with fittings, but, from the point of view of the provision of good light, consumers had generally been guaranteed this for the money they paid for it.

THE AUTHOR'S REPLY.

MR. OUGHTON, replying to points raised in the course of the discussion, said that, in regard to the mean lower hemispherical candle-power, he saw no reason why the gas industry should not set out their figures on the basis used by the electricians; and he had decided to convert the figures for his students this year, to see how they compared with figures relating to electricity. In regard to by-pass consumption with the switch, one rarely got more than 0·28 c.ft., and in favourable circumstances ¼ c.ft., per hour. This meant 10 therms over the whole 8000 hours. In the case of churches and chapels, where services or meetings were infrequent, the by-pass consumption was relatively high in comparison with buildings where there were meetings every night of the week. He fully appreciated what had been said in connection with the B.E.S.A. specification test point. There was really very little loss in the angles below horizontal; it was frequently the same as with a bare mantle. Their idea was to use the fittings where electricity was available, as well as where it was not. The gas industry was going to convince the electricians that it was out to do something. If they employed the best types of mantle, they did obtain satisfactory results. In connection with coloured lighting, some years ago the South Metropolitan Gas Company demonstrated a daylight mantle at the Ideal Home Exhibition, and he did not know why they were hearing nothing further about it at the present time. He knew of an instance in the North of the country where mantles were impregnated to obtain a yellow colour. They were tinted, and proved very satisfactory. In regard to Mr. Campbell's remarks on the switch control, Mr. Oughton stated that this always functioned. He had by-passes in all his ordinary rooms at home, and could honestly say that he had never known one to go out. The "positive" switch was reliable and absolutely positive in action, and had been introduced as suitable for smaller lamps. In regard to what had been said about the gas industry copying the electrical industry, Mr. Oughton said that the electrical industry went a step in front in architectural designs, and the gas industry were going to follow them—and chase them.

THE CHAIRMAN (Lt.-Col. K. Edgcumbe), in proposing a hearty vote of thanks to Mr. Oughton for his paper, said he was glad to see so many gas engineers present.

Reflections on the Report of the Fuel Research Board

The conclusions in the report on the influence of the size of coal on carbonization in vertical retorts—see last week's "JOURNAL," p. 100—are practically a repetition of those in Technical Paper No. 26, which we reviewed in the "JOURNAL" in August last.*

They are vitiated, as we then pointed out, by the fact that the tests were carried out under conditions which have no parallel in the conditions under which operations are conducted in the retort house.

At the Fuel Research Station, the constants in the investigation were, among others, the following:

(1) Temperature of combustion chambers.
(2) A constant throughput irrespective of the calorific value of the gas made or the facility with which the coal responded to the process.
(3) A constant proportion of steam irrespective of the rate of reaction within the retort.

Unfortunately, the effect of this procedure is that the tests fail to give effect to the principal advantages of the continuous vertical retort, which is particularly designed to enable temperatures, throughputs, and steam admission to be varied to suit the physical and chemical constituents of the coal carbonized and the production of gas at a constant calorific value.

The carbonizer in the retort house is confronted with the problem, given a particular coal (whether as to source of supply or physical condition), to make gas at the prescribed calorific value in such a manner as to secure the best make per ton and the greatest gross output from the plant.

Such a statement as that "the volume of gas produced is increased by the use of large coal" must be considerably modified when it is applied to practical conditions of working. Even when the throughput of coal is kept constant, as in the Fuel Research Station tests, the results, when reduced to equivalent volumes at a constant calorific value, were improved in every case as the size of the coal was reduced.

Taking the conclusions *seriatim* we should say:

(*a*) The size of coal within the limits in question does not have any serious effect on the ease of working, provided that the distribution of temperature throughout the length of the retort is suitably adjusted.
(*b*) There should be no carrying-forward of dust into the collecting mains if the retort is kept under definite pressure. High temperatures in the ascension pipes are generally due to the absence of this definite pressure, which is one of the most important factors in the all-round efficient operation of a continuous vertical retort plant.
(*c*) On reflection we are inclined to agree that the proportion of steam decomposed depends rather on the type of coal than the size of it as charged to the retort, because, of course, the steam reacts with the coke and not with the coal.
(*d*) The conclusions with regard to the effect of size upon yield of products are vitiated in the same way as those with regard to the make of gas. One never gets as much tar, for instance, making gas at 528 as at 474 B.Th.U.
(*e*) The same remark applies to the yield of coke, which, as a matter of fact, did not vary very greatly.
(*f*) That the reduction in the size of coal increases the strength of the coke is the usual experience.
(*g*) We have already dealt with this point in so far as it concerns the yield of gas per ton under practical conditions. The specific gravity of the gas naturally varies with its composition.
(*h*) We do not know that the yield of tar is affected by the size of coal under practical conditions.
(*i*) The last observation is that "by using sized coals it is possible to increase the throughput of the retorts."

As a matter of experience we should say this is generally true, but with some very important reservations. It is only, however, of serious interest to relate these to practice. What we mean is that it is useless to compare output of gas at 474 B.Th.U. with output of gas at 510.

At the same calorific value it is found in practice that, while it is necessary to reckon upon some 10 p.ct. less throughput with slacks than with run-of-mine coals, the best results are often obtained when up to 20 p.ct. of slack is added to nut coals to increase (*vide* point "*e*") the strength of the coke. This condition can generally be met without any reduction in throughput or output whatever. Mr. Glover, late of Norwich, found that he obtained the best results, as to both production per retort and yield of gas per ton, with large and small nuts in proportion, and at least one well-known experimenter in the laboratory found that speed of carbonization was at a maximum with a heterogeneous mixture of sizes of coal.

We repeat that we should like to see tests on these coals carried through under conditions as closely parallel as possible to those of the gas-works retort house.

Our thanks are due to the Director for the information with regard to the composition of the cast iron used in the "D" setting. We wonder whether he has ever considered some of the heat-resisting steels which are now available for this purpose.

The Director's remarks on the pitch used for briquette-making makes one wonder how these specifications were drawn up in the first place. We are inclined to think that one or two pitches actually in use for this purpose were examined (not by the Fuel Research Department) and their properties were adopted as the standard.

The formation of producer gas in the impinging jet combustion chamber with pulverized fuel seems to us to be such an interesting phenomenon that we hope we shall hear more of it.

The Report is rich with suggestion and, above all, promise, and we feel sure that no one will read it without incurring a deep debt of gratitude to the Director of Fuel Research and his staff, and without feeling that there must be very few Government Departments which return such full value for the very modest sums of money expended by it as the Department of Fuel Research.

TAMBT.

* "GAS JOURNAL," Vol. 191, p. 477.

Western Junior Gas Association

Discussion on Distant Pressure Control

A Meeting of the Association was held on Saturday, Jan. 10, in the Offices of the Bristol Gas Company, when Mr. H. C. Widlake, A.M.I.E.E., of Plymouth, read a paper on "Distant Pressure Control." The President, Mr. A. Barrett, of Frome, was in the chair. [Mr. Widlake's paper was published in the "Journal" last week.]

Discussion.

The PRESIDENT, in opening the discussion, asked if a transmitter designed for a certain maximum pressure could have the needles altered to accommodate a higher maximum. He would also like to know how the gasholder indicator was operated.

Mr. WIDLAKE said that instruments were usually designed to give a margin of pressure in excess of the purchaser's requirements, and the needles in certain cases could be altered; but if the additional pressure required was considerable, a new transmitter should be installed. The gasholder indicator operated a drum on which were contacts, which varied the current in the circuit in the same manner as the pressure transmitter.

Mr. S. HOLE (Bath) asked why the number of needles in the transmitter was limited to 40.

Mr. WIDLAKE replied that this number had been found to be adequate for all requirements, but, if necessary, the number could be increased. The needles must not be placed too close together, as globules of mercury adhering to them caused short circuiting, and gave false readings.

Mr. G. C. GUNSTON (Bristol) asked for information on the frequency of leakage faults.

Mr. WIDLAKE said that leakage faults fell into two classes—natural faults, such as might be caused by heavy rain, and which eventually disappeared; and permanent faults caused by trees or wires in contact with the circuit lines, or lines blown down by storm. Leakage could always be detected by use of the leakage shoe on the indicator, and in the case of line faults the Post Office authorities usually gave prompt attention.

Mr. W. M. PATERSON (Bath) remarked that, if the pressure at the transmitter was in excess of the maximum, and gas was blowing, the indicator would show the maximum reading. Could the pressure attendant tell if the transmitter was blowing? How was the transmitter constructed to indicate a pressure of (say) 10 lbs.? With the automatic loading in operation, what variation in pressure was caused by time lag in the pressure reaching the transmitter?

Mr. WIDLAKE said that the pressure attendant could not tell if the transmitter was blowing, but in any case the instrument should be designed to operate to higher pressures than would actually be required, in order to leave a margin. High-pressure transmitters operated with mercury instead of oil. In practice, the time lag caused very little variation in pressure, as the loading and unloading were gradual. The pressure chart (fig. 4) in the paper showed a variation of about 5-tenths at maximum demand at a point two miles from the station governors.

Mr. C. BATEMAN (Bath) said that Mr. Widlake seemed to have dealt with every possible application of the instrument, but he would like to know if the automatic loading operation could be worked in conjunction with pressure loading station governors, which were becoming so popular.

Mr. WIDLAKE considered that any operation which required the addition or taking-off of weights could be worked by the loading circuit, and he gave an example of a steam engine, the speed of which was controlled from a distance by a very small electric motor travelling to and fro on a lever arm connected with the throttle.

Mr. R. ROBERTSON, Chief Engineer of the Bristol Gas Company, in proposing a hearty vote of thanks to Mr. Widlake, said that two of the indicators were in use in Bristol with excellent results. The vote of thanks, seconded by Mr. J. T. SPENCER (Weston-super-Mare), was carried with acclamation, and Mr. WIDLAKE thanked the members for their appreciation, shown in the number of questions put to him.

Nature and Properties of Certain Hydrocarbons in Coal Gas, and Their Effect on Meter Leathers.

By R. S. ANDREWS, B.Sc., Chief Chemist, Metropolitan Gas Company, Melbourne.

[From a paper before the Australian Gas Institute.]

You will doubtless remember that, at the last general meeting of the Institute, Mr. C. F. Broadhead gave considerable prominence to certain information relating to meter leather troubles which he procured while abroad from the researches of Dr. Ralph Brown, of the Bureau of Mines, Pittsburgh. Dr. Brown's conclusions may be summarized as follows:

Unsaturated hydrocarbons occurring in the light oil content of carburetted water gas, particularly styrene and indene, polymerize in the presence of oxygen to gums and resins, and deposit on the meter leathers and moving parts with detrimental results. These unsaturated hydrocarbons owe their origin to imperfect cracking, due to low temperatures in the carburettor.

On the receipt of this information, the laboratory staff of the Metropolitan Gas Company was instructed to investigate this statement in relation to the hydrocarbon content of the gas from continuous vertical retorts, as the meter troubles had increased in proportion to the increased percentage of vertical retort gas.

This work has been in progress for over two years, and our investigations have verified the applicability of Dr. Brown's conclusions to gas produced in continuous vertical retorts, and led us to isolate many other unsaturated compounds with gum-forming properties, such as cumarone, methyl cumarones, and methyl indene.

The investigation covered:

(*a*) An examination of the light oil content of the gas produced from continuous vertical retorts and horizontal retorts, from both Maitland and English coals.
(*b*) An inquiry into the constitution of the oils deposited in mains and meters.
(*c*) The production in the laboratory of resins polymerized from unsaturated hydrocarbons contained in the gas.
(*d*) The recovery of resins formed in the oil deposited in mains and meters.
(*e*) The systematic examination of a large number of meters for resin deposits.
(*f*) The comparison of the synthetic resins produced in the laboratory with those discovered on the meter leathers.
(*g*) A search through the Company's records and a correlation of relevant data.
(*h*) An examination of meters in service to gain some insight into the quantity of unregistered gas for which the meters were responsible.

EXAMINATION OF THE LIGHT OILS CONTAINED IN COAL GAS AND CARBURETTED WATER GAS.

In these examinations fortune favoured us to the extent that the Metropolitan Gas Company possessed both horizontal and continuous vertical retorts, and thus a comparison of their light oil contents was a comparatively simple matter. These light oils were recovered by scrubbing the gas with creosote oil, boiling from 200°-300° C., or by passing through activated carbon. The light oils were then removed from the oil or carbon by means of steam, fractionally distilled, and again subjected to fractional distillation, using a twelve-bulb fractionating column. A comparison of the analyses of the gases scrubbed may be of interest:

P.Ct.	Woodall-Duckham Continuous Vertical Gas, Maitland Coal.	Horizontal Gas, Maitland Coal.	Carburetted Water Gas.	70 P.Ct. Woodall-Duckham Gas, English Coal, 30 P.Ct. C.W.G.
CO_2	2·4	3·2	5·0	3·0
O_2	4·3	1·5	0·6	1·0
C_nH_m	4·8	4·9	8·8	4·2
CO	6·9	7·0	32·0	14·5
CH_4	27·8	28·9	9·3	26·2
H_2	30·1	39·7	36·0	40·3
N_2	21·7	14·8	8·3	10·8

The data collected from an examination of the light oils are paraphrased in the following table:

Composition of Light Oil in Coal Gas and Carburetted Water Gas.

Fractionation.	Light Oil in Gas from Maitland Coal. Continuous Vertical Retorts.		Light Oil in Gas from English Coal. Continuous Vertical Retorts.		Light Oil in Gas from Maitland Coal. Horizontal Retorts.		Light Oil in Carburetted Water Gas.	
	P.Ct.	P.Ct. Additive.	P.Ct.	P.Ct. Additive.	P.Ct.	P.Ct. Additive.	P.Ct.	P.Ct. Additive.
0–78° C. . . .	3·34	3·34	6·00	6·00	4·60	4·60	8·00	8·00
78–85° C. . . .	25·00	28·34	21·15	27·15	40·23	44·93	6·66	14·66
85–105° C. . . .	38·00	66·34	40·23	67·38	29·67	74·60	29·11	43·77
105–115° C. . . .	7·00	73·34	8·67	76·05	5·10	79·70	11·11	54·88
115–125° C. . . .	5·21	78·55	6·67	82·72	3·45	83·15	3·33	58·23
125–135° C. . . .	3·64	82·19	4·66	87·38	2·36	84·51	4·00	62·33
135–140° C. . . .	2·04	84·23	2·00	89·38	4·87	89·38	3·33	65·56
140–150° C. . . .	2·50	86·73	2·33	91·71	2·41	92·79	3·77	69·33
150–160° C. . . .	1·14	87·87	1·00	92·71	1·00	93·79	3·77	73·10
160–170° C. . . .	3·44	91·31	2·89	95·60	2·32	96·11	3·77	76·87
170–175° C. . . .	1·89	93·20	2·48	98·08	1·54	97·65	4·66	81·53
175–178° C. . . .	0·60	93·80	0·44	98·52	0·58	98·23	3·33	84·86
178–185° C. . . .	3·01	86·81	1·48	100·00	1·77	100·00	5·55	90·41
185–200° C. . . .	3·19	100·00	..	..	..	..	8·22	98·63
200–220° C. . . .	..	..	..	..	..	..	1·39	100·00
220–250° C. . . .	..	..	..	..	..	..	..	..
Above 250° C. . .	..	..	..	..	..	..	..	..
Specific gravity. .	0·853	..	0·868	..	0·873	..	0·875	..
Unsaturated compounds, p.ct. . .	19·8	..	16·7	..	14·3	..	16·5	..
Galls. per ton of coal (14,000 c.ft.) . .	3·88	..	3·06	..	2·97	..	3·90	..

The interpretation of this table reveals the fact that gas from horizontal retorts is likely to be far less damaging to the meters than any of the other gases. Its light oil content is considerably lower, and the unsaturated hydrocarbons contained in the light oil are lower by 5·5 p.ct. Its specific gravity also indicates that its nature is more aromatic in composition. There appears to be a little difference between the composition of the light oil from English coal and that from Maitland; the former is less damaging. It will be readily observed that the carburetted water gas is the worst culprit, though not quite so bad as we imagined it might be, with 8·8 p.ct. of illuminants. Naturally the higher boiling constituents deposit first, and upon their deposition commence to scrub some of the light oil from the gas. How much of this deposited material is mechanically carried in the gas, and how much of it has been scrubbed from the gas on deposition of the heavier constituents, it is difficult to say. This brings us to the much-discussed composition of tar fog. This work has led us to believe that tar fog consists of a mixture of light tar and heavy naphthas, the latter being rich in styrene, indene, and the cumarones, in which are dissolved resins produced from polymerizable products in this mixture. Proof of this has been obtained by decomposing the resinous residue obtained on distilling drip oil to 220° C. Thus the first stage of this inquiry not only established the presence of styrene, cumarone, and indene in coal gas and carburetted water gas, but verified the presence of actual resins in the oil deposited in mains and meters.

The Composition of Drip Oil.

°C.	P.Ct.	P.Ct. Paraffin Hydrocarbons.	P.Ct. Unsaturated Hydrocarbons.	Chief Constituents.
0–90 . .	1·6	*Nil*	13	Hexahydrobenzene, benzene, dihydrobenzene, tetrahydrobenzene
90–100 . .	1·9	,,	5	Hexahydrotoluene
100–115 . .	2·7	,,	5	Tetrahydrotoluene, dihydrotoluene
115–125 . .	2·4	,,	10	Hexahydroisoxylene
125–142 . .	5·2	20	12	Tetrahydroxylene, nonane, ethyl benzene, xylene
142–150 . .	8·2	22	48	Styrene
150–163 . .	4·0	53	18	Decane
163–170 . .	9·1	42	46	Paraffin, mesitylene, cumarone, ethyl toluene
170–178 . .	8·9	42	23	Nonane, dihydrocymene, hydrindene
178–190 . .	14·3	47	38	Undecane, indene
190–200 . .	9·0	50	28	Naphthalene tetrahydride, methyl cumarone, methyl indene
200–220 . .	12·2	46	23	Tridecane, dimethyl cumarone
Naphthalene.	8·0	..	..	Naphthalene
Resinous residue . .	12·5	..	..	Polymerized indene styrene resins

(To be concluded.)

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THE STANTON IRONWORKS COMPANY LIMITED
NEAR NOTTINGHAM

PARLIAMENTARY INTELLIGENCE

Private Bill Clauses Relating to Gas.

Provisions in General Measures—Session 1931.

(*Concluded from p.* 106.)

Blackburn Corporation.—The Corporation's limits of supply for gas are extended to include the parishes of Balderstone, Osbaldeston, Salesbury, and Samlesbury. Power to supply gas is repealed in respect of a portion of the parish of Billington. The Corporation are authorized to sell and let gas fittings, provided that the charges are adjusted to meet the expenditure and are shown separately on the demand note and in the accounts of the gas undertaking. They are relieved from the obligation to furnish a new or increased supply of gas for other than lighting or domestic use, except on such terms as they may reasonably require.

Brighton Corporation.—The Bill is mainly a consolidation of earlier Acts. One clause re-enacts existing provisions for the protection of the Gas Company in the event of injury or damage to any of their pipes or apparatus resulting from the use of electric current on the tramways. Provision is made for arbitration in default of agreement.

Doncaster Corporation.—There are various clauses in this Bill to confer further powers upon the Corporation with respect to their gas undertaking.

Scarborough Corporation.—Clause 92 empowers the Corporation to make by-laws for ensuring that any hole made through the wall of a building below the level of the ground shall be so stopped as to prevent the free passage of gas into the building, and for securing that any geyser or similar gas-heated water apparatus of the rapid water heating type or any gas apparatus for heating a building is properly fixed and adequately ventilated.

Stoke-on-Trent Corporation.—From April 1, 1932, the gas undertakings at Stoke-on-Trent, Newcastle-under-Lyme, and Wolstanton United are to be maintained as separate concerns, until the Corporation decide otherwise; but until they are combined, the charges in the respective areas must not exceed the maximum charges authorized by the existing local Acts and Orders. Clause 22 extends the Corporation's gas limits to include the Borough of Newcastle-under-Lyme, the Urban District of Wolstanton United, and the Parishes of Clayton and Keele.

Ventnor Urban District Council.—The Bill provides for the transfer of the water undertaking of the Ventnor Gas and Water Company to the Urban District Council of Ventnor, on payment of £21,500. Clause 15 states that the gas undertaking of the Company shall be deemed to be an undertaking as defined by section 9 of the Gas Undertakings Act, 1929, and the provisions of that Act shall apply to the Company accordingly.

Several authorities have clauses in their Bills to extend the provisions of the Weights and Measures Act, 1889, so as to apply to coke.

Some Railway Bills extend the provisions of sections 18-23 of the Railway Clauses Consolidation Act, 1845, for the protection of the gas and water mains, pipes, and apparatus of any local authority or gas or water board.

REGISTER OF PATENTS

Prepayment Meters.—No. 338,882.

SUTHERLAND, A. G., LTD., and MACE, B. E., both of Birmingham.

No. 23,097; July 27, 1929. No. 12,901; April 26, 1930.

This invention relates more particularly to the type of prepayment mechanism which incorporates change-speed mechanism between the drive from the meter and the customary worm or screwed shaft, the object being to enable an operator to set the meter for operation by insertion of either of two denominations of coins.

Prepayment mechanism made in accordance with this invention is of the type having change-speed mechanism interposed between the drive from the meter and the customary worm or screwed shaft, such change-speed mechanism comprising two gear wheels fixed on a common spindle, the wheels and the spindle being fixed against longitudinal movement, and a further two gear wheels for engagement therewith, both fixed on a boss which is slidably mounted on a sleeve around the worm or screwed shaft. The arrangement is such that the boss is driven from the fixed spindle at different speeds relative thereto, according to the pair of gear wheels engaged, and the invention is characterized in that the spindle carrying the gear wheels receiving the drive from the meter is fixed, and that the boss in association with the worm or screwed shaft is longitudinally movable.

No. 338,883.

No. 23,098; July 27, 1929. No. 23,857; Aug. 3, 1929.

This invention relates to the type of mechanism which can be adapted so that it will alternatively receive coins of more than one domination; and in connection with this part of the invention provision is made whereby the adjustment can be effected in a particularly simple and expeditious manner. In meters of this type the mechanism or an inherent part thereof is customarily mounted upon the front change plate.

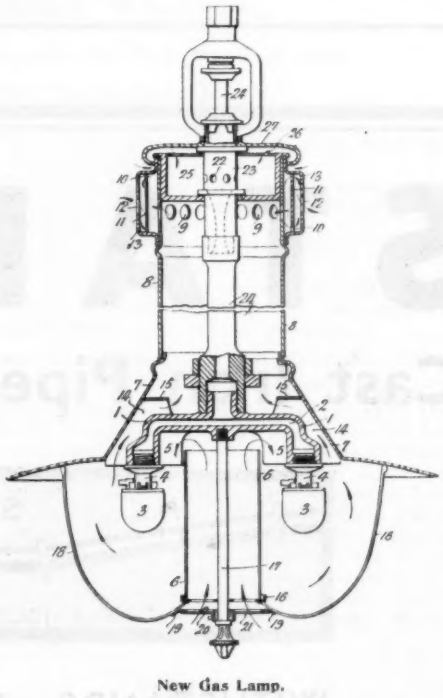
Prepayment mechanism made in accordance with this invention comprises a front change plate associated with a coin carriage, slidable under the action of inserting a coin and which is provided with a pivoted tongue or pivoted abutment to be engaged by the coin, and adapted to alter the effective length of the coin space so that it can alternatively accommodate coins of different denominations. The coin carriage and the pivoted tongue are so interlocked that the tongue cannot be moved until the coin carriage has been slid into a predetermined position, which position cannot be obtained until removal of the front change plate.

Gas Lamps.—No. 339,494.

SOUTH METROPOLITAN GAS COMPANY and CHANDLER, D., both of 709, Old Kent Road, S.E. 15.

No. 37,776; Dec. 9, 1929.

This invention relates to improvements in incandescent gas lamps for use where a great intensity of illumination is required. There is provided a superheater for heating the mixture of primary air and gas in the form of an inverted cup, and means for directing secondary air into the cup, the secondary air being preheated thereby before it passes to the mantle. Preferably the mantles are located around the lower outer periphery of the cup, and the secondary air directing means directs the secondary air to a central zone of the cup, the air then sweeping outwardly along the base of the cup and down the side thereof. The gas supply pipe is located centrally of the lamp, and the secondary air directing means, a globe, the superheater, a canopy, and a chimney are detachably mounted thereon as separate units.



New Gas Lamp.

The invention is illustrated in the accompanying drawing. 1 is a superheater which is provided with a passage 2 for supplying the primary mixture to mantles 3 supported by carriers 4. The superheater is in the form of an inverted cup, an annular zone of which is divided by a series of radial vanes or fins 5. Extending within the undivided portion of the cup is a tube 6 whose lower end is open to the atmosphere and whose upper end directs air to support combustion into a central zone of the cup, whence the air sweeps in contact with the fins and with the wall of the cup to the combustion zone adjacent the mantles.

The products of combustion flow through a gap formed between

the outer surface of the superheater and the inner surface of a canopy 7, to a long chimney 8, thence through orifices 9 in the chimney, through orifices 10 formed in a central shield 11, and finally escape through orifices 12 in an outer shield 13. Extending into the gap are fins or vanes 14, and a deflector plate 15 is provided to cause the products of combustion to sweep over the upper surface of the superheater.

The tube 6 is supported by a flanged spider 16 which is mounted on a rod 17 screwed into the superheater, and rests upon a globe 18 supported by a flanged ring 19 carried by the rod 17 and having perforations 20 which can be opened to a variable extent by a " hit and miss " valve disc 21 for regulating the supply of secondary air.

The supply of primary air to the gas is effected through orifices 22 in a fitting 23 interposed in the gas supply pipe 24, the orifices being open to a chamber 25 formed at the upper end of the chimney and placed into communication with the atmosphere through orifices 26 masked by a baffle plate 27. The secondary air is heated before it passes to the mantles, first by its passage through the tube 6 and secondly by its passage through the cup-shaped space formed by the superheater, which also heats the mixture of primary air and gas.

Heating of Carbonizing Settings.—No. 339,641.

WOODALL-DUCKHAM (1920), LTD., and DUCKHAM, A. McD., both of Victoria Street, S.W. 1.

No. 24,009; Aug. 6, 1929.

According to this invention, a construction is provided in which the advantages of regenerative heating are obtained without the necessity of expensive and complicated flue construction and of costly reversal gear. Coke ovens are made with heating walls divided into individual flue units by cross walls. Into these individual units heating gases are admitted at the lower ends, travel in an upward direction, arrive at the upper end, and reverse their direction of travel, leaving the heating channels at the same end as they entered; in actuality a fountain effect of the heating gases is obtained in the individual heating flues.

The heating gases are admitted preferably under pressure to the unit heating flues through a series of recuperative elements, one provided for each unit flue. The elements are arranged in such a way as to be easily removable. A further feature of the invention is the provision of interchangeable nozzles at the outlet of the recuperative elements, for the purpose of varying the type and shape of the fountain flame entering into the unit flue.

If the furnace or oven is to be heated by means of rich gas, suitable ducts are provided for the introduction of this at or near the nozzle of the recuperative element. If the furnace is heated by means of poor gas, such as producer or blast furnace gas, the recuperative element is provided with suitable divisions so that one part of the element is used for preheating the combustion air, while the other is used for preheating the poor gas.

Straightening the Walls of Coke Ovens and Retorts.—No. 339,578.

STETTINER CHAMOTTE-FABRIK ACTIEN-GESELLSCHAFT, of Berlin-Wilmersdorf.

No. 9670; March 26, 1930. Convention date, July 16, 1929.

According to this invention, inwardly-bulging walls of coke ovens, gas producing ovens, and retorts are straightened by pressure from the inside of the chamber during the working—that is, directly after emptying of the chamber. The apparatus for carrying out this process consists of an expanding pressure device which is composed of two shoes fixed to a rod, the distance between which is variable. Conveniently the shoes are connected to the rod by a pair or pairs of toggle-levers, the straightening of which presses the shoes apart, such straightening being effected by movement of the rod in its longitudinal direction. The movement of the rod is effected by forming it at its free end as a screw-threaded spindle which carries a nut rotatably mounted but held against endwise movement, rotation of the nut moving the spindle endwise.

Conversion Ovens.—No. 339,814.

THE BURTON FOUNDRY COMPANY, LTD., and CAMPBELL, D. F., both of Burton-on-Trent.

No. 39,707; Dec. 30, 1929.

This invention relates to the gas and coal type of combination range. The object is to provide means whereby the act of removing the gas burner or burners from the oven or hot closet locks the tap controlling the gas supply in the " off " position, the tap being capable of movement to the " on " position only when the burner is in position in the oven. Insertion of the burner also automatically opens the oven ventilator and an outlet to the usual flue.

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AGENTS FOR AUSTRALIA:
AUSTRALASIAN GAS EQUIPMENT CO., LTD., SYDNEY.

AGENTS FOR NEW ZEALAND:
Messrs. DOUGALL, COOMBS & CO., LTD., WELLINGTON.

GAS MARKETS & MANUFACTURES

Stock Market Report.

[For Stock and Share List, see later page.]

Depressed conditions continued to dominate most markets on the Stock Exchange last week, and from the outset the slight signs of improvement which were noticeable at the close of the previous week were negatived. In the midst of all this gloom, however, there are just a few bright spots, and the Gas Section is one of them. The volume of business in this department last week was heavier than for some time past, and appreciations in market values occurred to no less than twelve issues. In the Metropolitan and Suburban group of Companies, Wandsworth and Lea Bridge ordinary stocks both gained 2 points to 112-115 and 127-132 respectively, and the former Company's 5 p.ct. debenture and Sutton 5 p.ct. debenture recorded a similar increase. South Metropolitan ordinary rose ½ point to 105-108; while Tottenham 4 p.ct. debenture and Gas Light 3 p.ct. debenture both hardened 1 point. Gas Light £1 units registered a slight drop of 1½d. to 19s. 4½d.-19s. 10½d., though the prices of recorded transactions moved within precisely similar limits to those of the previous week. Among the Provincial Companies, Newcastle £1 units made a further advance of 3d. to 18s.-18s. 6d. at the local Exchange, and British ordinary and Bournemouth 4 p.ct. debenture each rose 1 point. Of the Companies operating abroad, European ordinary gained 5 points to 100-110, and Montevideo lost 5 points to 95-105.

Several new issues have been notified during the week, the largest among these being that of the Tottenham District Company. Tenders are invited for £150,000 5½ p.ct. irredeemable preference stock at a minimum of £104, at which price the yield is £5 5s. 9d. p.ct. The stock will rank *pari passu* with the existing £130,000 5½ p.ct. irredeemable preference stock (now quoted at 102-103). and immediately after the charge in respect of £62,235 5 p.ct. preference stock now existing. The proceeds of the issue are mainly required for the extension of the Company's works and plant to meet the increasingly heavy demand for both gas and electricity and for the repayment (in June next) of £98,695 7½ p.ct. mortgages and debentures. The last day for receipt of tenders is Tuesday, Jan. 27.

Another issue is that by the Lea Bridge Company, who are offering for sale by tender £30,000 6 p.ct. irredeemable preference stock at a minimum of £107 10s., at which figure the yield works out at £5 11s. 7d. p.ct. The phenomenal success of this Company can be gauged by the fact that since 1913 the sales of gas have increased by nearly 130 p.ct., and the number of consumers from 20,664 to 38,829. The proceeds of the present issue are to meet the costs of extensions to works and mains necessitated by the continual growth of the Company's business. On the basis of the results for 1929, the dividend on the preference stock, including this issue, is covered 7 times. The last day for receipt of tenders is Monday, Feb. 9.

Current Sales of Gas Products.

The London Market for Tar, Tar Products, and Sulphate.

LONDON, *Jan.* 19.

The values of tar products remain unchanged, and are as follows:

Pitch, 45s. per ton f.o.b.

Creosote, for export, 5¾d. to 6d. per gallon f.o.b.

Pure toluole, about 2s. per gallon; pure benzole, about 1s. 8d. per gallon; 95/160 solvent naphtha, about 3s. 9d. per gallon.

All prices of spirits are *ex* sellers' works.

Tar Products in the Provinces.

Jan. 19.

The average prices of gas-works products during the week were: Gas-works tar, 18s. 6d. to 22s. 6d. Pitch—East Coast, 43s. to 43s. 6d. f.o.b. West Coast—Manchester, Liverpool, Clyde, 43s. to 43s. 6d. f.o.b.* Toluole, naked, North, 1s. 6¾d. to 1s. 7¼d. Coal-tar crude naphtha, in bulk, North, 9d. to 10d. Solvent naphtha, naked, North, 1s. 2½d. to 1s. 3d. Heavy naphtha, North, 11d. to 1s. Creosote, in bulk, North, liquid and salty, 3⅝d. to 3⅝d.; low gravity, 1⅝d.; Scotland, 3⅜d. to 3⅝d. Heavy oils, in bulk, North, 5⅜d. to 5⅝d. Carbolic acid, 60's, 1s. 2d. to 1s. 2½d. Naphthalene, £10 to £12. Salts, £3 to £5, bags included. Anthracene, "A" quality, 2½d. per minimum 40 p.ct., purely nominal; "B" quality, unsaleable.

* All prices for pitch are now quoted on the basis of f.o.b. In order to arrive at the f.a.s. value at any port, it will be necessary to deduct the loading costs and the tolls whatever they may be.

Tar Products in Scotland.

GLASGOW, *Jan.* 17.

There is no change to report in general market conditions; but the tone has improved somewhat owing to an increase in the number of inquiries.

Pitch.—The market continues dull, with values unchanged at 42s. 6d. to 45s. per ton f.o.b. Glasgow for export and round 42s. 6d. per ton f.o.r. works for home.

Refined tar to Ministry of Transport Specification. Competition is keen, and prices are about 2¾d. to 3d. per gallon naked at makers' works.

Creosote.—New business is slow, but prices are unchanged. B.E.S.A. Specification is 2¾d. to 3d. per gallon; low gravity, 3¼d. to 3½d. per gallon; and neutral oil, 3d. to 3¼d. per gallon—all f.o.r. works in bulk.

Cresylic.—Considerable stocks are available and orders are scarce. Pale, 97/99 p.ct., is 1s. 6d. to 1s. 7d. per gallon; dark, 97/99 p.ct., 1s. 5d. to 1s. 6d. per gallon; and pale, 99/100 p.ct., 1s. 8d. to 1s. 9d. per gallon—all in buyers' packages at works.

Crude naphtha.—Production is low and value is steady at 4d. to 4½d. per gallon f.o.r. in bulk.

Solvent naphtha.—More inquiries are circulating, but values are unaltered. 90/160 is 1s. 2½d. to 1s. 3d. per gallon, and 90/190 is 1s. to 1s. 0½d. per gallon.

Motor benzole.—Only small orders are being placed. Supplies are offered at 1s. 4d. per gallon f.o.r. makers' works.

Pyridines are without interest. 90/160 is nominal at 3s. to 3s. 3d. per gallon.

Benzole Prices.

The following are considered to be the market prices at the present time:

	s.	d.		s.	d.	
Crude benzole	0	7½	to	0	8½	per gallon at works
Motor ,,	1	3	,,	1	4	,, ,, ,,
Pure ,,	1	7½	,,	1	8½	,, ,, ,,

Trade Notes.

Gas Lighting Controllers for Newcastle.

The Horstmann Gear Company, Ltd., of Bath, have received orders from the Newcastle-upon-Tyne and Gateshead Gas Company for their controllers for public lighting and gas switches for domestic lighting to the value of £10,000. Substantial contracts have also been secured from Manchester, Halifax, Ashton-under-Lyme, Oldham, York, Preston, Burnley, and Croydon.

Contracts Advertised To-Day.

Oxide of Iron.

The Gas Committee of the Borough of Darwen invite tenders for the supply of oxide of iron. [Advert. on p. 166.]

Coal.

The Gas Department of the Clacton Urban District Council invite tenders for the supply of gas coal. [Advert. on p. 166.]

Gas Acts (1920 and 1929) Orders.

SPECIAL ORDER.

Stroud Gas Light and Coke Company.

To confirm an agreement entered into to acquire the undertaking of the Painswick Gas Company. This undertaking is owned by Mr. Clarke Jeffery, who is to receive as part consideration for his interest an allotment of £2000 of consolidated ordinary stock in the Stroud Company. The Stroud Company seek authority to charge for a period of ten years from the date of the Order a differential price not exceeding 6d. per therm above the price charged to consumers of gas now supplied by the Company for all gas supplied in the Parish of Pitchcombe and part of the Parish of Painswick.

STOCK AND SHARE LIST.

[For Stock Market Report, see earlier pages.]

Issue.	Share.	When ex-Dividend.	Dividends. Prev. Hf. Yr.	Dividends. Last Hf. Yr.	NAME.	Quotations. Jan. 16.	Rise or Fall on Week.	Transact'ns Lowest and Highest Prices During the Week.
£			% p.a.	% p.a.				
171,978	Stk.	Aug. 14	5	5	Aldershot 5 p.c. max. C. .	73—78	..	..
822,992	,,	,,	4	¾	Do. 4 p.c. Pref. . .	73—76	..	..
1,551,868	,,	Oct. 9	7⅛	7⅛	Alliance & Dublin Ord. . .	100—105	..	102
374,000	,,	Jan. 8	4	4	Do. 4 p.c. Deb. . .	70—75*	..	..
522,655	,,	Aug. 28	7	7	Barnet Ord. 7 p.c. . . .	108—111	..	..
300,000	1	Oct. 23	1/4½	1/7½	Bombay, Ltd.	15/6—17/6	..	16/6
174,500	10	Aug. 14	9	9	Bournemouth 5 p.c. . .	14½—15½	..	..
500,050	10	,,	7	7	Do. B 7 p.c. . .	12¼—13	..	..
439,180	10	,,	6	6	Do. Pref. 6 p.c. .	11—11½	..	11½
50,000	Stk.	Dec. 18	3	3	Do. 3 p.c. Deb. .	58—61	..	..
162,025	,,	,,	4	4	Do. 4 p.c. Deb. .	77—80	+1	..
367,900	,,	Aug. 28	7½	7½	Brighton & Hove 6 p.c. Con.	112—117	..	..
371,880	,,	,,	6½	6½	Do. 5 p.c. Con.	102—105	..	..
1,287,500	,,	July 24	5	5	Bristol 5 p.c. max.	93—95a	..	..
855,000	,,	Sept. 25	8	7	British Ord.	109—114	+1	111½—114
100,000	,,	Dec. 18	7	7	Do. 7 p.c. Pref. . . .	109—114	..	..
120,000	,,	,,	4	4	Do. 4 p.c. Red. Deb. .	74—77	..	..
450 000	,,	,,	5	5	Do. 5 p.c. Red. Deb. .	95—98	..	..
100,000	,,	Jan. 8	5	5	Cambridge 5 p.c. Deb. .	95—98*	..	..
100,000	10	Dec. 4	10	6	Cape Town, Ltd.	82—93	..	..
100,000	10	Nov. 6	4½	4½	Do. 4½ p.c. Pref. .	6½—7½	..	7½
150,000	Stk.	Dec. 18	4½	4½	Do. 4½ p.c. Deb. .	70—75	..	74½—74½
926,860	,,	July 24	6	6	Cardiff Con. Ord. . . .	96—98	..	..
287,860	,,	Jan. 8	7½	7½	Do. 7½ p.c. Red. Deb. .	97—100*	..	..
157,150	,,	Aug. 14	6½	5	Chester 5 p.c. Ord. . . .	86—91b	..	..
98,986	1	Oct. 9	†2/-	†2/-	Colombo, Ltd. Ord. . . .	82/—84/-	..	83/3—83/9
24,500	1	,,	1/4⅛	1/4⅛	Do. 7 p.c. Pref. .	18/—20/-	..	..
609,204	1	Oct. 9	1/9⅛	1/4⅛	Colonial Gas Assn. Ld. Ord	16/6—18/6	..	..
296,053	1	,,	1/7½	1/7½	Do. 8 p.c. Pref.	18/—20/-	..	..
2,078,280	Stk.	July 24	7	6	Commercial Ord.	95—98	..	96¼
475,000	,,	Dec. 18	3	3	Do. 3 p.c. Deb. . .	57—60	..	..
787,560	,,	Aug. 14	7	7	Croydon sliding scale. . .	106—109	..	107¼—108½
453,100	,,	,,	5	5	Do. max. div. . . .	83—86	..	86—86
542,270	,,	Aug. 14	10	7	Derby Con.	115—125e	..	..
55,000	,,	Dec. 18	4	4	Do. Deb.	65—70e	..	..
309,000	,,	Aug. 28	5	5	East Hull Ord. 5 p.c. . . .	72—75	..	73—74
1,002,180	,,	Sept. 25	†7g	†4	European, Ltd.	100—110	+5	100—104
18,629,125	,,	July 24	5⅝	5⅝	Gas Light & Coke 4 p.c. Ord.	19/4½—19/10½	—/1½	19/6—19/9
2,600,000	,,	,,	3⅝	3⅝	Do. 3½ p.c. max. . .	63½—65½	..	64½—65½
4,157,020	,,	,,	4	4	Do. 4 p.c. Con. Pref. . .	79—82	..	80½—81½
5,602,620	,,	Dec. 18	3	3	Do. 3 p.c. Con. Deb. . .	61—64	+1	61½—63
3,642,770	,,	,,	5	5	Do. 5 p.c. Red. Deb. . .	99—102	..	100½—103½
161,460	,,	Sept. 11	10	10	Harrogate Cons. 10 p.c. max.	155—160	..	..
82,500	,,	Aug. 28	7	7	Hastings & St. L. 5 p.c. Conv.	98—103	..	..
258,740	,,	,,	6½	6½	Do. 3½p.c. Conv.	79—84	..	..
70,000	10	Oct. 9	1	10	Hongkong & China, Ltd. .	13—14	..	..
218,200	Stk.	Aug. 14	6	6	Hornsey Con. 3½ p.c. . . .	88—91	..	..
2,436,594	,,	Nov. 6	25	15	Imperial Continental Cap. .	340—360	..	340—365
223,130	,,	Aug. 14	3½	3½	Do. 3½ p.c. Red. Deb.	50—85	..	83
235,242	,,	Aug. 14	8½	8½	Lea Bridge 5 p.c. Ord. . .	127—132	+2	128—130
2,145,907	,,	Aug. 14	6	6	Liverpool 5 p.c. Ord. . . .	96—97b	..	..
600,000	,,	Sept. 25	7	7	Do. 7 p.c. Red. Pref. .	99—101b	..	..
165,786	,,	Aug. 28	8	9	Maidstone 5 p.c. Cap. . .	123—128	..	..
63,480	,,	Dec. 18	3	3	Do. 3 p.c. Deb. . .	54—57	..	..
75,000	5	Dec. 4	†10	†10	Malta & Mediterranean . .	5¼—6	+¼	5⅞—5¾
					Metrop'litan (of Melbourne)			
892,000	—	Oct. 1	5½	5½	5½ p.c. Red. Deb. . . .	88—91	..	..
675,000	Stk.	Nov. 20	†8	†8	Montevideo, Ltd.	95—105	—5	..
2,061,315	,,	July 24	5⅜	5	Newcastle & Gateshead Con.	18/—18/6d	+·/3	..
682,856	,,	,,	4	4	Do. 4 p.c. Pref. . .	73—74d	..	..
691,705	,,	Jan. 8	3½	3½	Do. 3½ p.c. Deb. . .	66½—67½d*	..	..
277,285	,,	Nov. 5	5	5	Do. 5 p.c. Red. Deb.	98—100d	..	..
169,940	,,	Aug. 28	7½	7½	North Middlesex 6 p.c. Con.	115—120	..	..
396,160	,,	Aug. 14	5	5	Northampton 5 p.c. max. . .	76—81	..	..
300,000	,,	Nov. 20	7	9	Oriental, Ltd.	104—109	..	..
60,000	5	18 My., '15	—	—	Ottoman	0—¼	..	..
205,162	Stk.	Dec. 18	8	8	Plym'th & Stonehouse 5 p.c.	107—112	..	..
424,416	,,	Aug. 28	8	8	Portsm'th Con. Stk. 4 p.c. Std	115—120	..	..
241,446	,,	,,	5	5	Do. 5 p.c. max. . . .	80—83	..	..
686,312	Stk.	July 24	4	4	Primitiva 4 p.c. Rd. Db. 1911	83—86	..	..
389,813	,,	Dec. 18	4	4	Do. 4 p.c. Cons. Deb.	83—86	..	85—86
150,000	10	Sept. 25	6	6	San Paulo 6 p.c. Pref. . .	8½—8¾	..	..
1,736,968	Stk.	Aug. 28	6½	6½	Sheffield Cons.	105—107e	..	..
95,000	,,	Jan. 8	4	4	Do. 4 p.c. Deb. . . .	76—78e*	..	..
90,000	10	June 5	‡4	‡5	South African	4—6	..	5⅛—5½
3,709,895	Stk.	Aug. 14	7½	5	South Met. Ord.	105—108	+¼	105—106½
1,135,812	,,	,,	6	6	Do. 6 p.c. Irred. Pf.	112—115	..	114—114½
1,895,445	,,	Jan. 8	3	3	Do. 3 p.c. Deb. . .	59—62*	..	61
734,000	,,	Sept. 11	6½	6½	Do. 6½ p.c. Red. Db.	99—102	..	100½
91,500	,,	Aug. 14	8½	8½	South Shields Con. . . .	109—110d	..	..
1,543,795	,,	July 24	6½	6½	South Suburban Ord. 5 p.c.	102—105	..	103½—104½
468,837	,,	Dec. 18	5	5	Do. 5 p.c. Deb.	99—102	..	99—101½
647,740	,,	Aug. 28	5	5	Southampton Ord. 5 p.c. max.	75—78	..	..
121,275	,,	Dec. 18	4	4	Do. 4 p.c. Deb.	75—78	..	..
179,014	,,	July 24	8	8	Sutton Ord.	120—130	..	..
94,500	,,	Jan. 8	5	5	Do. 5 p.c. Deb. . . .	96—99*	+2	..
250,000	,,	Aug. 28	7	7	Swansea 7 p.c. Red. Pref. .	98—101	..	..
200,000	,,	Dec. 18	6½	6½	Do. 6½ p.c. Red. Deb. .	100—102	..	..
1,076,490	,,	July 24	6½	6½	Tottenham District Ord. .	103—107	..	105
150,000	,,	,,	5½	5½	Do. 5½ p.c. Pref. . .	102—105	..	..
199,005	,,	Dec. 18	4	4	Do. 4 p.c. Deb. . .	77—80	+1	77—79
85,701	,,	Sept. 25	6	6	Tuscan, Ltd., 6 p.c. Red. Db.	74—79	..	..
					Uxbridge, Maidenhead, &			
309,094	,,	Aug. 28	7	7	Wycombe 5 p.c.	97—102	..	..
88,330	,,	,,	5	5	Do. 5 p.c. pref. . .	90—95	..	..
					Wandsworth, Wimbledon,			
1,120,970	,,	July 10	—	7	and Epsom Cons. . .	112—115	+2	113½—114½
200,000	,,	,,	5	5	Do. 5 p.c. Pref. . . .	95—98	..	..
468,344	,,	Dec. 18	5	5	Do. 5 p.c. Deb. . . .	99—102	+2	101½

Quotations at:—*a.*—Bristol. *b.*—Liverpool. *c.*—Nottingham. *d.*—Newcastle. *e.*—Sheffield. *f.*—The quotation is per £1 of stock. *g.*—Paid on £10 Shares. * Ex. div. † Paid free of income-tax. ‡ For year. § Div.=10 p.ct. p.a. less tax and less tax on interim dividend.

COMPANY NOTICES.

THE GAS LIGHT AND COKE COMPANY.

NOTICE is Hereby Given that an ORDINARY GENERAL MEETING of the Proprietors of this Company will be held at this Office on Friday, the 6th day of February next, at Twelve o'clock (noon) precisely, to transact the usual Business, including the Declaration of a Dividend for the Half-Year ended on the 31st day of December last, and to Elect Directors and Auditors in the place of those who will at such Meeting go out of Office in compliance with the Company's Acts or Schemes of Amalgamation.

By order,
WILLIAM LYLE GALBRAITH,
Secretary.

Chief Office:
Horseferry Road,
Westminster, S.W. 1,
Jan. 19, 1931.

THE GAS LIGHT AND COKE COMPANY.

NOTICE is Hereby Given that, pursuant to the Standing Orders of both Houses of Parliament, an EXTRAORDINARY MEETING of the Proprietors of the Gas Light and Coke Company, for the purpose of considering the provisions of the Bill now before Parliament, intituled "A Bill to provide for the transfer to the Gas Light and Coke Company of the Undertakings of the Southend-on-Sea and District Gas Company and the Brentwood Gas Company; to confer various powers upon the Gas Light and Coke Company; and for other purposes," will be held at the Chief Office of the Gas Light and Coke Company, Horseferry Road, Westminster, S.W. 1, on Friday, the 6th day of February next, immediately after the Ordinary General Meeting to be held at the said Office at Twelve o'clock (noon) on that day.

At such Extraordinary Meeting, the said Bill will be submitted for the consideration and approval of the Proprietors then present, either in person or by proxy.

By order,
WILLIAM LYLE GALBRAITH,
Secretary.

Chief Office:
Horseferry Road,
Westminster, S.W. 1,
Jan. 19, 1931.

SOUTH METROPOLITAN GAS COMPANY.

NOTICE is Hereby Given that the ORDINARY GENERAL MEETING of the Proprietors of this Company will be held at the Cannon Street Hotel, in the City of London, on Wednesday, the 4th day of February next, at Twelve o'clock noon precisely, to receive the Directors' Report and the Accounts of the Company for the Year ended the 31st of December last; to declare a Dividend for the same period; and to elect two Directors and one Auditor in place of those retiring by rotation.

The TRANSFER BOOKS WILL BE CLOSED for both PREFERENCE and ORDINARY STOCKS on and from the 28th day of January inst. until after the Meeting.

By order,
FRANK DAY,
Secretary.

Offices:
709, Old Kent Road,
London, S.E. 15,
Jan. 17, 1931.

SOUTH SUBURBAN GAS COMPANY.

NOTICE is Hereby Given that the TRANSFER BOOKS relating to the FIVE PER CENT. ORDINARY STOCK of this Company WILL BE CLOSED from the 31st of January inst. to the 13th of February prox., both days inclusive.

By order of the Board,
WILFRID WASTELL,
Commercial Manager and Secretary.

Head Offices,
Lower Sydenham, S.E. 26,
Jan. 21, 1931.

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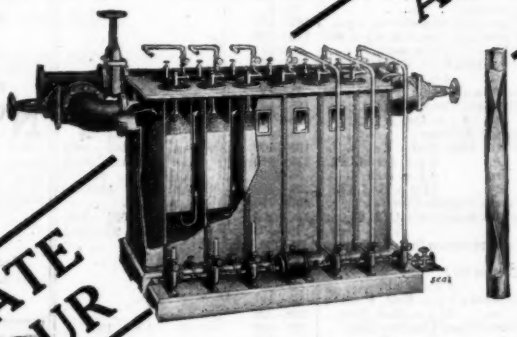

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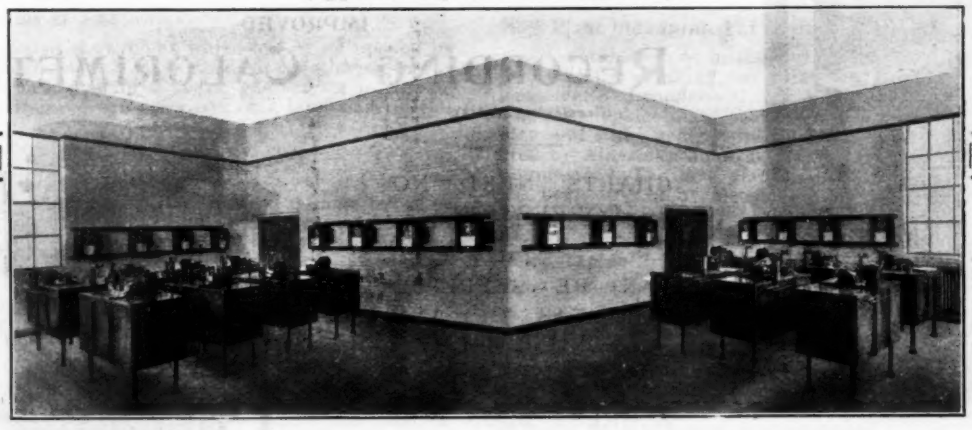
15 THOMAS CALORIMETERS

(approved by the Gas Referees)



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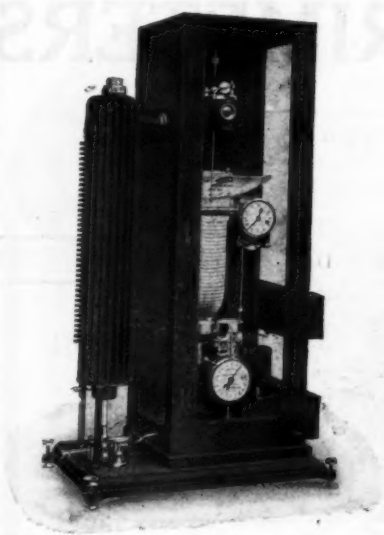

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